Item 1089 Y3.A17/5:10/11h
11h

PEDCo ENVIRONMENTAL, INC.
11499 CHESTER ROAD
CINCINNATI, OHIO 45246
(513) 782-4700
TELEX (513) 782-4807

COMPLETED
ORIGINAL

ANALYSIS OF ONGOING IMPLEMENTATION AND ENFORCEMENT IN THE OHIO RIVER VALLEY REGION

by

PEDCo Environmental, Inc.
11499 Chester Road
Cincinnati, Ohio 45246

Contract No. 11-AQ-7695
PN 3485-1-B

Project Officer
Matthew A. Low

NATIONAL COMMISSION ON AIR QUALITY
499 SOUTH CAPITOL STREET, S.W., 2ND FLOOR
WASHINGTON, D.C. 20003

August 1980

BRANCH OFFICES
CHESTER TOWERS
DALLAS, TEXAS
KANSAS CITY, MISSOURI
COLUMBUS, OHIO
DURHAM, NORTH CAROLINA
pedco
94

DISCLAIMER

This report was written for the National Commission on Air Quality by PEDCo Environmental, Inc., Cincinnati, Ohio, under Contract No. 11-AQ-7695. The contents of this report are reproduced herein as received from the contractor. The opinions, findings, and conclusions expressed are those of the author and not necessarily those of the National Commission on Air Quality.

#11h
8/80

Analysis of Ongoing Implementation and Enforcement in the Ohio River Valley Region

NCAQ Staff Summary

Project Manager: John Thomasian
Contractor: PEDCo Environmental, Inc.

The objective of this report is to provide a status of ongoing implementation and enforcement efforts in the Ohio River Valley region at the Federal, state, and local levels. The report describes initial schedules for all State Implementation Plan (SIP) strategies and any delays to these schedules. With regard to these schedules, the report discusses enforcement activities of the following air pollution control agencies:

- Jefferson County Air Pollution Control District (JCAPCD) - serves Jefferson County, Kentucky
- Regional Air Pollution Control Agency (RAPCA) - serves Clark, Darke, Greene, Miami, Montgomery, and Preble Counties in Ohio and referred to as the Dayton Air Quality Control Region (AQCR)
- Southwestern Ohio Air Pollution Control Agency (SWOAPCA) - serves Butler, Clermont, Hamilton, and Warren Counties in Ohio and referred to as the Cincinnati AQCR
- Indiana Air Pollution Control Board (IAPCB) - serves all of Indiana
- Kentucky Department of Natural Resources and Environmental Protection (KDNREP) - serves all of Kentucky except Jefferson County
- Ohio Environmental Protection Agency (OEPA) - serves all of Ohio and is aided by 13 local agencies
- U.S. EPA Region IV - serves the States of Alabama, Florida, Georgia, Kentucky, Mississipp, North Carolina, South Carolina, and Tennessee
- U.S. EPA Region V - serves the States of Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin.

Data for this report were gathered from information in the annual reports of air pollution control agencies, from SIPs, and primarily from direct contact with the agencies.

The results of this study suggest that the primary obstacle to proper implementation and enforcement in the Ohio River Valley region has been the difficulty of getting regulations approved without undergoing concurrent or subsequent challenge. PEDCo reports that litigation affecting SIPs, especially the portion of the Ohio SIP concerning sulfur dioxide (SO_2) control, delayed effective implementation more than any other cause. Depending on the nature of the legal challenge, enforcement can be restrained by the court for the plaintiffs or for all sources. More importantly, air pollution control agencies are hesitant to force compliance on a source if the regulations covering that source may be changed in the future. The result is that the SO_2 control portion of the Ohio SIP has been only partially enforceable since initial submittal in 1972. The 1979 Ohio SIP received conditional approval in June 1980.

The study reports, however, that once regulations become promulgated without further challenge, most emission sources comply with the emission standards and enforcement becomes unnecessary. The attached table summarizes pertinent enforcement history. It shows the number of sources subject to 1972 SIPs; number of sources out of compliance with existing regulations in 1973, 1977 and 1979; number of investigations of noncompliance in 1979; number of enforcement actions, defined as administrative orders and prosecutions, from 1972 to 1979; and total emissions from sources out of compliance in 1979.

In most cases, enforcement action and voluntary compliance have been successful, although the available data used in the report does not fully allow confirmation of this conclusion. In at least one case--the Jefferson County Air Pollution Control District implementation and enforcement record--total emissions from noncomplying TSP and SO_2 sources account for almost 100 percent of the respective projected emission inventories after application of all controls designed to achieve attainment.

Most air pollution control agencies asserted that in cases in which noncompliance does occur, rarely is the attainment schedule (or "reasonable further progress") jeopardized. The one exception was noncompliance of powerplants concerning SO_2 regulations, a situation resulting in a designation of primary standard nonattainment in portions of the study area. Conversely, nonattainment of the national standard for total suspended particulates (TSP) was thought to be caused mainly by emissions from nontraditional sources, which were not coverd by 1972 SIPs.

In projecting future enforcement difficulties, PEDCo reports that new (1979 SIP) regulations directed at control of VOC emissions from solvent handlers and users may face difficulty. The O_3 control strategies in the 1972 SIPs generally

provided exemptions for sources using solvents classified as nonphotochemically reactive. Sources of nonexempt solvent emissions frequently changed from nonexempt to exempt solvent use as a means of attaining compliance with SIP regulations. Since preparation of the 1972 SIPs, most solvents classified as exempt have been found to be photochemically reactive. Thus, the 1979 SIPs regulate emissions of almost all solvents. Because previously exempt sources are now covered by regulations, considerable resistance to enforcement is anticipated.

FIGURES

Number		Page
1-1	Agencies Involved in Implementation and Enforcement Efforts in the Ohio River Valley Region	3

TABLES

Number		Page
2-1	Summary of Enforcement Information: Ohio River Valley Region	6
3-1	Historical Information: Ohio SIP	14
3-2	SIP Information: Dayton AQCR	26
3-3	Enforcement Information: Dayton AQCR	27
3-4	SIP Information: Cincinnati AQCR	34
3-5	Enforcement Information: Cincinnati AQCR	38
4-1	Historical Information: Kentucky SIP	42
4-2	SIP Information: Cincinnati and North Central AQCR's in Kentucky	49
4-3	Enforcement Information: Cincinnati and North Central AQCR's in Kentucky	55
4-4	SIP Information: Jefferson County, Kentucky	60
4-5	Enforcement Information: Jefferson County, Kentucky	64
5-1	Historical Information: Indiana SIP	68
5-2	SIP Information: Clark, Dearborn, and Floyd Counties	75
5-3	Enforcement Information: Indiana	77

ABBREVIATIONS AND SYMBOLS

AQCR	Air Quality Control Region
AQMA	Air Quality Maintenance Area
BACT	Best Available Control Technology
EBR	Environmental Board of Review
EKMA	Empirical Kinetic Modeling Approach
EPA	U.S. Environmental Protection Agency
FMVCP	Federal Motor Vehicle Control Program
HC	Hydrocarbons
IAPCB	Indiana Air Pollution Control Board
I/M	Inspection/maintenance
JCAPCD	Jefferson County Air Pollution Control District
KDNREP	Kentucky Department of Natural Resources and Environmental Protection
KIPDA	Kentuckiana Regional Planning and Development Agency
LAER	Lowest Achievable Emission Rate
LG&E	Louisville Gas and Electric Company
MGTCC	Montgomery-Greene Transportation Coordinating Committee
MPO	Metropolitan Planning Organization
MVRPC	Miami Valley Regional Planning Commission
NAAQS	National Ambient Air Quality Standards
NOV	Notice of Violation
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen oxides
NSPS	New Source Performance Standards
O_3	Ozone
OEPA	Ohio Environmental Protection Agency
OKI	Ohio-Kentucky-Indiana Regional Council of Governments
RACT	Reasonably Available Control Technology
RAPCA	Regional Air Pollution Control Agency
SIP	State Implementation Plan
SMSA	Standard Metropolitan Statistical Area
SO_2	Sulfur dioxide
SWO-APCA	Southwestern Ohio Air Pollution Control Agency
TCM	Transportation control measure
TSP	Total suspended particulates
VOC	Volatile organic compounds

ACKNOWLEDGMENT

This report was prepared for the National Commission on Air Quality by PEDCo Environmental, Inc., Cincinnati, Ohio. Mr. John Thomasian was the Project Coordinator for the National Commission, and Mr. Matthew A. Low was the Project Officer for the National Commission. Mr. Charles E. Zimmer served as the PEDCo Phase Coordinator, and Mr. Edwin A. Pfetzing was the PEDCo Task Manager. The principal authors were Mr. Douglas J. Orf and Mr. Edwin A. Pfetzing.

SECTION 1

INTRODUCTION

The objective of this report is to provide the National Commission on Air Quality with concise information describing the status of ongoing implementation and enforcement efforts in the Ohio River Valley region at the Federal, state, and local levels. The report describes initial schedules for all State Implementation Plan (SIP) strategies and any delays to these schedules. Emission reductions attributable to the strategies are compared with emission reductions required to attain National Ambient Air Quality Standards (NAAQS). Finally, the report discusses enforcement activities of air pollution control agencies.

The study area includes the Standard Metropolitan Statistical Areas (SMSA's) of Cincinnati, Dayton, Hamilton-Middletown, and Louisville, and the counties bordering the Ohio River between Cincinnati and Louisville. Enforcement in the study area is carried out by three local air pollution control agencies, three state air pollution control agencies, and two Regional Offices of the U.S. Environmental Protection Agency (EPA). The agencies responsible for enforcement in the study region are:

Jefferson County Air Pollution Control District (JCAPCD) - serves Jefferson County, Kentucky

Regional Air Pollution Control Agency (RAPCA) - serves Clark, Darke, Greene, Miami, Montgomery, and Preble Counties in Ohio and referred to as the Dayton Air Quality Control Region (AQCR)

Southwestern Ohio Air Pollution Control Agency (SWOAPCA) - serves Butler, Clermont, Hamilton, and Warren Counties in Ohio and referred to as the Cincinnati AQCR

Indiana Air Pollution Control Board (IAPCB) - serves all of Indiana

Kentucky Department of Natural Resources and Environmental Protection (KDNREP) - serves all of Kentucky except Jefferson County

Ohio Environmental Protection Agency (OEPA) - serves all of Ohio and is aided by 13 local agencies

U.S. EPA Region IV - serves the States of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee

U.S. EPA Region V - serves the States of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin

Figure 1-1 shows the overall study area and the jurisdictions of the enforcement agencies. Also shown are the areas covered by three Metropolitan Planning Organizations (MPO's) in the Ohio River Valley region. These MPO's are:

Kentuckiana Regional Planning and Development Agency (KIPDA)

Miami Valley Regional Planning Commission (MVRPC)

Ohio-Kentucky-Indiana Regional Council of Governments (OKI)

Although presently not active in enforcement, these MPO's were involved in preparing the 1979 SIP's.

Data for this report were gathered from information in the annual reports of air pollution control agencies, from SIP's, and primarily from direct contact with the agencies. Section 2 summarizes the findings of this study, and Sections 3 through 5

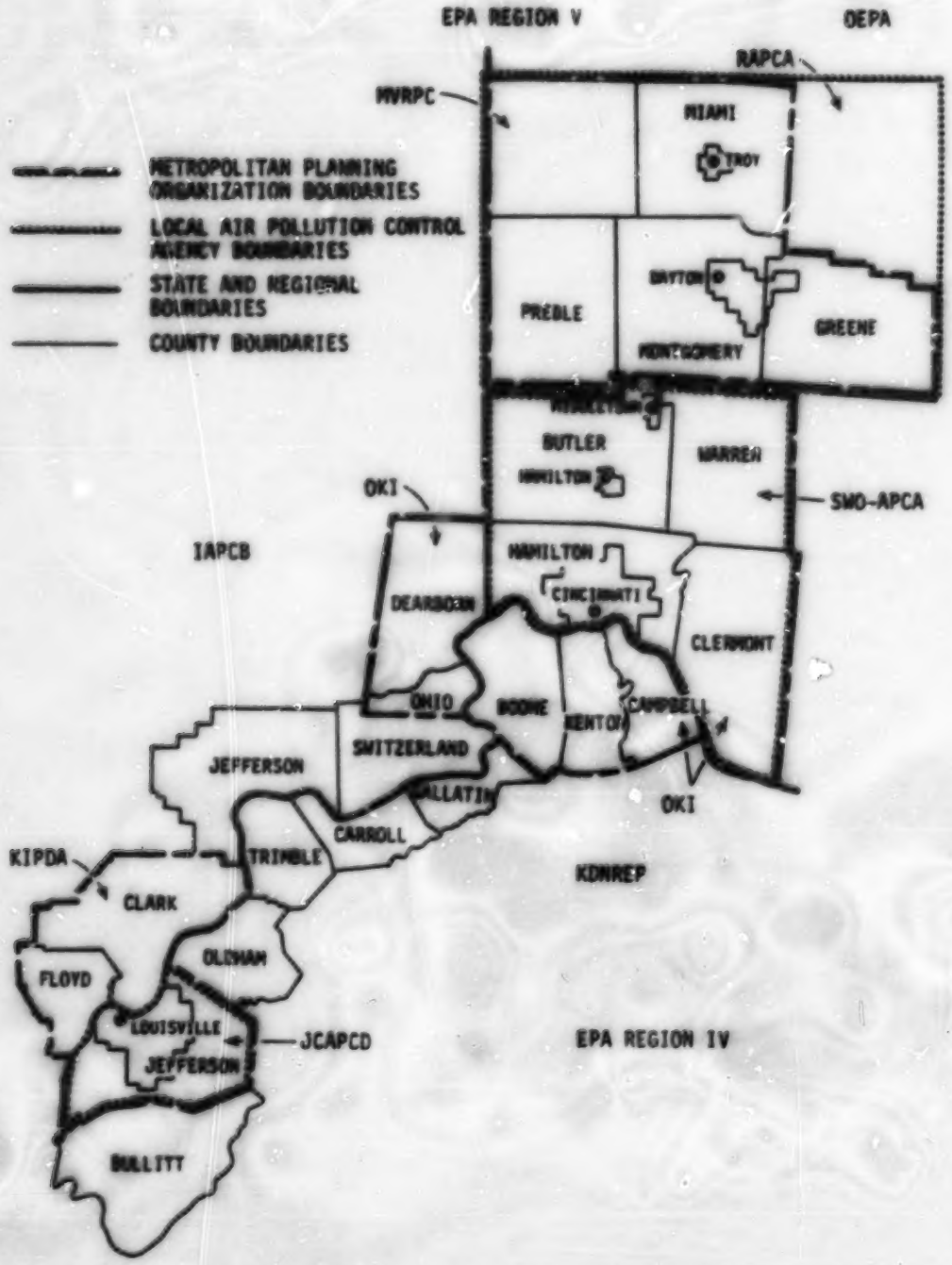

Figure 1-1. Agencies involved in implementation and enforcement efforts in the Ohio River Valley region.

discuss implementation and enforcement activities by states and local agencies. Section 6 concerns implementation and enforcement activities at the EPA regional level.

SECTION 2

SUMMARY

One of the objectives of this report is to identify obstacles to the implementation and enforcement of air pollution control regulations. The primary obstacle in the Ohio River Valley region has been the difficulty of getting regulations approved and unchallanged.

Litigation affecting SIP's, especially the portion of the Ohio SIP concerning sulfur dioxide (SO_2) control, delayed effective implementation more than any other cause. Depending on the nature of the legal challenge, enforcement can be restrained by the court for the plaintiffs or for all sources. More importantly, air pollution control agencies are hesitant to force compliance on a source if the regulations covering that source may be changed in the future. The result is that the SO_2 control portion of the Ohio SIP has been only partially enforceable since initial submittal in 1972. The 1979 Ohio SIP received conditional approval in June, 1980. Specific litigation that delayed enforcement is described in Sections 3 through 6.

Because most emission sources complied with the emission regulations once they were in force, enforcement action was usually unnecessary. Table 2-1 summarizes enforcement information.

TABLE 2-1. SUMMARY OF ENFORCEMENT INFORMATION: OHIO RIVER VALLEY REGION

Enforcement agency	Number of sources subject to 1972 SIP's		Number of sources out of compliance			Number of investigations of non-compliance in 1979	Number of enforcement actions,[a] 1972-79	Total emissions from sources out of compliance in 1979, tons/yr		
	Major allowable sources	Total	1973	1977	1979			TSP	SO_2	VOC
RAPCA	58	4500	1100	100	25	320	50-60	7500	500	1000
SWO-APCA	101	5500	~3800	b	c	683	520[d]	2100	2100	0
KDNREP	9	e	f	28	22[g]	49	0	61	2	541
JCAPCD	89	370	h	i	4[j]	~300	Hundreds[k]	4603	216,972	751
IAPCB	22	b	m	n	2	b	b	b	b	b

[a] Defined as administrative orders and prosecutions.

[b] Data not available.

[c] Five major TSP sources, two major SO_2 sources, no VOC sources.

[d] Includes 500 administrative orders and 20 prosecutions.

[e] Throughout Kentucky, 1218 sources were subject to the 1972 SIP.

[f] Computer data erased.

[g] No major sources.

[h] Essentially all foundries and coal burning facilities were out of compliance.

[i] All sources on a compliance schedule.

[j] Three sources on a compliance schedule.

[k] Every notice of violation requires a court appearance. In 1979 there were 89 enforcement actions.

[m] Throughout Indiana, 93 sources were out of compliance. In 1974, the Indiana counties in the study area contained 8 major sources that were out of compliance.

[n] Throughout Indiana, 5 sources were out of compliance.

It shows the number of sources subject to 1972 SIP's; number of sources out of compliance with existing regulations in 1973, 1977 and 1979; number of investigations of noncompliance in 1979; number of enforcement actions, defined as administrative orders and prosecutions, from 1972 to 1979; and total emissions from sources out of compliance in 1979.

Most air pollution control agencies asserted that noncompliance with SIP regulations was usually not related to attainment of NAAQS. The one exception was noncompliance by powerplants with SO_2 regulations which has resulted in a designation of nonattainment of the national SO_2 standard in portions of the study area. Nonattainment of the national standard for total suspended particulates (TSP) was thought to be caused mainly by emissions from nontraditional sources, which were not covered by 1972 SIP's.

Mobile sources are the primary contributors to ozone (O_3) nonattainment. The O_3 control strategies in the 1972 SIP's generally provided exemptions for sources using solvents classified as nonphotochemically reactive. Sources of nonexempt solvent emissions frequently changed from nonexempt to exempt solvent use as a means of attaining compliance with SIP regulations. Since preparation of the 1972 SIP's, most solvents classified as exempt have been found to be photochemically reactive. Thus, the 1979 SIP's regulate emissions of almost all solvents. Because previously exempt sources are now covered by regulations, considerable resistance to enforcement is anticipated.

SECTION 3

IMPLEMENTATION AND ENFORCEMENT IN OHIO

3.1 OHIO ENVIRONMENTAL PROTECTION AGENCY

The Ohio counties involved in this study are Butler, Clermont, Greene, Hamilton, Miami, Montgomery, Preble, and Warren Counties. During initial preparation of the 1972 Ohio SIP, six of the eight counties were within the jurisdiction of RAPCA or SWO-APCA; the other two (Preble and Clermont Counties) were within the jurisdiction of the Southwest District office of OEPA. Soon thereafter, however, responsibility for the air pollution control program in Preble County was delegated to RAPCA, and SWO-APCA was delegated responsibility for the program in Clermont County. The 1972 SIP was prepared by the Air Pollution Unit of the Ohio Department of Health; this unit served as the technical arm of the Ohio Air Pollution Control Board. A change in Ohio statutes created OEPA in September 1972. The Ohio Air Pollution Control Board was dissolved, and all environmental programs were transferred from the Ohio Department of Health to OEPA.

3.1.1 Strategy Schedules

Because most counties in the study area are within the jurisdication of RAPCA or SWO-APCA during development of the 1972 SIP, these two local agencies submitted to OEPA the air quality, emission inventory, and other data necessary for preparing

strategies that would lead to attainment of NAAQS. At the time of submission of the 1972 SIP the Cincinnati and Dayton AQCR's were not meeting primary NAAQS for photochemical oxidants, nitrogen oxides (NO_x), TSP and secondary NAAQS for SO_2. As described in Subsections 3.2 and 3.3, the strategies developed were directed toward enforcement of air pollution control regulations affecting stationary sources. Considerable legal activity, however, occurred after approval of the TSP and SO_2 portions of the 1972 SIP.

The 1979 SIP indicated that all eight counties are nonattainment areas for O_3 and that portions of the Cincinnati and Dayton AQCR's are nonattainment areas for TSP and SO_2. In the Dayton AQCR, the Miami Valley Regional Planning Commission and the Montgomery-Greene Transportation Coordinating Committee prepared the strategies concerning mobile sources in the O_3 control portion of the 1979 SIP. Further, RAPCA staff submitted information to OEPA concerning stationary sources of VOC emissions. The OKI prepared the strategies affecting mobile sources in the O_3 control portion of the 1979 SIP; and SWO-APCA, prepared the strategies affecting stationary sources of O_3 precursor emissions.

Based upon information from RAPCA and SWO-APCA, the TSP control portion of the SIP was approved by OEPA and submitted to the EPA Regional Administrator on June 18, 1980. The state version of the SO_2 control portion of the SIP was conditionally approved in June 1980.

As described in Subsection 3.2, the RAPCA strategy for O_3 control involved calculated reductions of VOC and NO_x emissions resulting from implementation of the Federal Motor Vehicle Control Program (FMVCP), application of Reasonably Available Control Technology (RACT) to stationary sources, and assorted transportation control measures (TCM's). The SWO-APCA strategy used the same measures with the addition of an inspection/maintenance (I/M) program.

In both the Dayton and the Cincinnati AQCR's, TSP nonattainment is caused by nontraditional sources of pollution. Because the emission impact of such sources is ill-defined, studies must be conducted.

The conditionally approved SO_2 control portion of the 1979 SIP specifies emission limitations by source and county. If these limitations are met, the national SO_2 standard should be attained in the Dayton and Cincinnati AQCR's. Some enforcement of the SO_2 control portion of the SIP occurred from 1972 through 1978.

3.1.2 Implementation Delays

Because local agencies were responsible for implementation of SIP strategies in the Dayton and Cincinnati AQCR's, OEPA involvement was limited to litigation. Both RAPCA and SWO-APCA experienced delays, primarily because of legal actions brought by government and industry. Also, the agencies noted problems resulting from poor Federal guidance, such as those caused by the exempt solvent regulation and the changing of NAAQS during preparation of a new O_3 strategy.

3.1.3 Emission Reductions

An emission reduction was projected for each strategy. Based upon these projections, RAPCA and SWO-APCA determined whether standards would be attained by the prescribed deadlines. In the 1972 SIP, SWO-APCA indicated that new stationary source regulations would result in TSP and SO_2 attainment. Even with the exempt solvent regulation, however, SWO-APCA anticipated that achievement of the photochemical oxidant standard would require a 2-year extension to the deadline; attainment was based on the inclusion of an I/M program in the cities of Cincinnati and Norwood. Also, SWO-APCA projected that the NO_x standard would not be met. The 1979 SIP indicates that attainment of the O_3 standard will occur before 1987.

In the 1972 SIP, attainment of the national photochemical oxidant standard was projected despite the exemption of certain organic materials from regulations in the Dayton and Cincinnati AQCR's. Attainment of the secondary SO_2 standard was not required until July 1978. Because the SIP indicated that the area in Ohio with highest TSP levels (Cleveland) would attain the national TSP standard by the deadline, OEPA also projected attainment for Dayton and Cincinnati AQCR's. The 1979 SIP indicates that proposed reductions of VOC and NO_x emissions will be sufficient for RAPCA to attain the national O_3 standard; current projections of TSP and SO_2 emission reductions for RAPCA and SWO-APCA are not available.

3.1.4 Enforcement Activities

The SWO-APCA and RAPCA were responsible for enforcement of SIP strategies in the study area. Notices of violations (NOV's) were issued, cases of noncompliance were investigated, and informal conferences were held. When further legal action was required, the case was referred first to OEPA and then to the Office of the Ohio Attorney General. Although unnecessary in most cases, OEPA's responsibility included the enforcement of SIP regulations and the pursuit of formal litigation.

3.2 REGIONAL AIR POLLUTION CONTROL AGENCY

The RAPCA operates from downtown Dayton and serves as the enforcement agent for OEPA in six counties of southwestern Ohio. Four of these (Montgomery, Greene, Miami and Preble Counties) are part of the study area. As an OEPA agent, RAPCA is responsible for the enforcement and implementation of regulations in the Ohio section of the Dayton AQCR. The responsibilities cover strategies described in SIP's, which were required by the Clean Air Acts of 1970 and 1977. Although not responsible for sources located in Preble County during preparation of the 1972 SIP, RAPCA received this responsibility from the Southwest District Office of OEPA in late 1972.

3.2.1 Strategy Schedules

The Clean Air Act of 1970 required that states develop strategies for attainment of primary NAAQS during 1975, and secondary NAAQS by 1978. Additionally, the act required that NAAQS be maintained. Because monitoring showed that the Dayton

AQCR was not meeting photochemical oxidant and TSP primary standards, the 1972 SIP specified attainment strategies for these pollutants.

To achieve NAAQS, Ohio developed more stringent TSP regulations. Of the roughly 4500 permitted sources in the four county Dayton AQCR, several hundred were not meeting emission regulations as specified in the 1972 SIP. These noncompliance sources, which included foundry operations and large industrial and powerplant boilers, were put on compliance schedules.

As shown in Table 3-1, the TSP plan was approved by the EPA Regional Administrator on September 22, 1972. In early 1973, however, a group of industries filed a lawsuit in the U.S. Sixth Circuit Court of Appeals. This suit, which contended that the EPA Administrator had not provided an adequate comment period, was upheld, and the Administrator was required to withdraw approval and provide a proper comment period. Whereas the old plan had required compliance by June 1975, the revised plan delayed the compliance deadline until April 1977. The revised plan was approved in April 1974 and indicated that attainment would be achieved within 3 years even though some sources would still be out of compliance.

The 1972 SIP regulation defined photochemically reactive (i.e. nonexempt) solvents and restricted emissions of these solvents from a variety of sources. Many sources switched to compounds considered nonphotochemically reactive (i.e., exempt) to achieve compliance. Additionally, minor transportation

TABLE 3-1. HISTORICAL INFORMATION: OHIO SIP

Action	Date	Comments
Hearings held on Ohio SIP	January 10, 11, and 13, 1972	Board hearing on January 18, 1972, to include comments from hearing
OEPA SIP submitted to EPA Administrator	January 31, 1972	More restrictive than Federal standards
OEPA SIP approved	September 22, 1972	
Suit filed before U.S. Sixth Circuit Court of Appeals; court ruled against EPA	June 2, 1973	Adequate comment period was not provided; utilities could not implement adequate controls by deadline
Court denied 2-year extension of deadline for SO_2 limits	June 26, 1973	Utilities wanted more time to install control equipment so that Ohio coal could be burned
TCM comments requested for OEPA plan	August 15, 1973	
Ohio Governor withdrew SO_2 portion of SIP	August 17, 1973	Regarded as unenforceable by State
OEPA SIP resubmitted	November 15, 1973	Enough comment time provided
OEPA SIP approved for all pollutants except SO_2	April 15, 1974	
EPA designated all AQCR's as NO_x attainment areas	May 8, 1974	
OEPA submitted new SO_2 portion of SIP	May 30, 1974	Challenged at State level
Hearings on designation as Air Quality Maintenance Area (AQMA)	August 26, 27, 1974	For areas with potential to exceed NAAQS within 10 years

(continued)

TABLE 3-1 (continued)

Action	Date	Comments
SO_2 portion of SIP turned down by Environmental Board of Review (EBR)	September 12, 1974	Procedural grounds (less stringent)
OEPA hearing concerning revisions to SO_2 portion of SIP	November 5, 1974	Burning Ohio coal in some counties at issue
OEPA SO_2 regulations not applicable to utilities per adjudicatory hearing	December 16, 1974	Utilities still required to comply with TSP regulations by April 15, 1977
OEPA suspended decision of December 16, 1974	January 16, 1975	Reaffirmed TSP compliance date and rescinded SO_2 decision
Utilities submitted compliance schedules to OEPA	July 15, 1975	
U.S. Sixth Circuit Court of Appeals not ready to review appeal by Buckeye Power et al.	October 24, 1975	
OEPA withdrew plan, and Region V proposed SO_2 portion of SIP	November 10, 1975	
Public hearings on proposed EPA SO_2 regulations	December 18, 1975; January 6, 8, and 13, 1976	Hearings took 9 months; county-by-county regulations developed
OEPA requested EPA to modify SO_2 strategy	January 13, 1976	OEPA complained about "overkill"
EPA proposed revision to SIP concerning extension of attainment date	January 14, 1976	

(continued)

TABLE 3-1 (continued)

Action	Date	Comments
EPA proposed SIP revisions inadequate for attainment and maintenance	August 2, 1976	
Region V version of SIP adopted	August 27, 1976	
EPA approved extension of TSP attainment date, but disapproved extensions of NO_x, O_x, and HC attainment dates	September 23, 1976	
Emission limit corrections by EPA in SO_2 portion of SIP	November 30, 1976	
Ohio Lung Association sued EPA for failure to enforce photochemical oxidant portion of SIP	January 4, 1977	EPA granted a 2-year extension
EPA revised strategy on open burning	May 6, 1977	
EPA filed memo with U.S. Sixth Circuit Court of Appeals	May 27, 1977	Argued against the stay
Deadline for petition of amended SIP	June 17, 1977	
Hearings on OEPA SO_2 regulations	November 1, 8, and 15, 1977	Fourth attempt by OEPA
EPA revised SIP to control open burning	February 3, 1978	
U.S. Sixth Circuit Court upheld EPA SO_2 regulations	February 13, 1978	OEPA complaint about "overkill" dismissed because Ohio was only major industrial state without SO_2 regulations in a SIP

(continued)

TABLE 3-1 (continued)

Action	Date	Comments
Governor temporarily relaxed TSP and SO_2 regulations	February 14, 1978	Regulations on a case-by-case basis because severe weather and coal strike
Fuel sampling analysis approved by EPA for compliance determination	February 15, 1978	Model used by EPA required further study
U.S. Sixth Circuit Court issued supplement to decision of February 15, 1978	June 29, 1978	
U.S. Sixth Circuit Court denied petitions concerning due process	October 16, 1978	
At a public hearing, EPA proposed to make SO_2 limits in Butler County more stringent	October 25, 1978	Other areas subject to less stringent limits
EPA extended comment period for proposed ammendment to Ohio SO_2 plan	December 29, 1978	
OEPA planned December 1978 hearings on rule revision	December 29, 1978	
EPA sought comments on methods used by utilities to comply with SO_2 regulations	December 29, 1978	
Ozone alert level changed	December 29, 1978	Revised emission reduction objective
EPA solicited comments on decision concerning use of dispersion coefficients for SO_2 limits	January 15, 1979	Whether power plants needed additional compliance time was at issue
U.S. Supreme Court refused to review decision by U.S. Sixth Circuit Court of Appeals	January 15, 1979	Modeling techniques in SO_2 plan at issue

(continued)

TABLE 3-1 (continued)

Action	Date	Comments
U.S. Supreme Court refused to review case that barred utility from challenging TSP and SO_2 standards	March 19, 1979	Also barred granting a variance
EPA adopted alternative method of compliance with SO_2 regulations	August 22, 1979	
OEPA adopted SO_2 regulations less stringent than existing ones	August 31, 1979	Remainder of the SIP was 8 months overdue
White House offered no assurance of acceptance of less stringent SO_2 regulations	September 14, 1979	
EPA pointed out difficiencies in SO_2 portion of SIP from OEPA	October 4, 1979	Difficiencies included 30-day averaging period for analysis of sulfur in fuel, failure to locate maximum impact, and failure to adjust for variations in stack temperature
OEPA planned public hearing on revisions to TSP portion of SIP	October 17, 1979	
EPA received O_3 revisions to SIP	November 2, 1979	
EPA corrected errors in SIP submittal of August 1979	January 21, 1980	
EPA proposed changes in SO_2 portion of OEPA SIP	February 5, 1980	EPA disapproved portions contradictory to policy such as attainment date

(continued)

TABLE 3-1 (continued)

Action	Date	Comments
EPA proposed approval of some SO_2 strategies, conditional approval of others, and disapproval of still others	February 25, 1980	EPA disapproved 30-day averaging and extension of compliance date for sources using fuel switching to comply
EPA proposed approval of some O_3 strategies and disapproval for others	March 10, 1980	TCM's and stationary source regulations approved; I/M program disapproved
EPA revised secondary boundary in Clermont County	March 19, 1980	
EPA requested comments on economics of low-sulfur coal use	April 1, 1980	Based on new data about coal use
Comment period extended for revisions to SO_2 portion of SIP	April 10, 1980	
Comment period extended for revisions to O_3 portion of SIP	May 5, 1980	

control strategies were planned, although projections indicated that photochemical oxidant standards would not be met by June 1, 1975.

The original SIP did not require an SO_2 strategy in the Dayton AQCR because the primary standard was being achieved. Further, the State permitted AQCR's until July 1978 to meet the more stringent secondary standard for SO_2 control. Because of many enforcement problems and legal actions involving the State, Region V, and various industries, the SO_2 SIP regulations were not actively enforced until 1978.

Although the area was ruled a nonattainment area for NO_x in 1972, the initial SIP proposed no strategy other than application of the Best Available Control Technology (BACT) to new stationary sources. An extension of the attainment deadline by 2 years (i.e., until 1977) was requested to provide additional time for the FMVCP to improve air quality. On May 8, 1974, however, EPA announced that all regions would be considered attainment for NO_x because of problems with the reference method used for NO_x monitoring.

Air quality modeling in the Dayton AQCR during preparation of the 1979 SIP showed TSP nonattainment in portions of all four counties, O_3 nonattainment throughout all four counties, and SO_2 nonattainment in parts of Montgomery and Greene Counties.

Information provided by RAPCA to the State concerning a TSP implementation plan was approved and submitted in the SIP on June 18, 1980. The Clean Air Act of 1977 requires that the NAAQS for

TSP be attained as expeditiously as possible and that the national primary standard be achieved no later than December 31, 1982. The approved strategy required that TSP sources in Montgomery and Miami Counties meet these deadlines and that TSP sources in Greene and Preble Counties, which had achieved the primary standard by April 1977, meet the secondary standard by December 31, 1987. Projections indicate that application of RACT to stationary sources and enforcement of a more stringent fugitive dust regulation will not produce TSP attainment by the deadlines. Because emissions from nontraditional sources cause the TSP problem, RAPCA will study means of controlling such sources, with emphasis on enforcement measures.

With technical assistance from RAPCA, the MVRPC submitted the proposed O_3 portion of the 1979 SIP to OEPA on December 13, 1979. The Empirical Kinetic Modeling Approach (EKMA) indicated that a 62 percent reduction in VOC emissions would be necessary to achieve the new O_3 standard of 0.12 ppm. Application of the linear rollback method with the new O_3 standard, however, showed that only a 40 percent VOC reduction was required. EKMA projections indicated that an I/M program would be necessary for Dayton. Projections based on the linear rollback method with the 0.12 ppm O_3 standard indicated that such a program would not be needed, therefore the linear rollback method was used. By 1982, VOC emissions are expected to be reduced by 44 percent, mainly because of the application of RACT to stationary sources, implementation of the FMVCP, and establishment of 28 transportation control measures such as improved traffic flow, staggered working hours, carpooling programs, and shuttle services.

Despite current and historical monitoring data indicating SO_2 attainment, parts of Montgomery and Greene Counties have recently been designated SO_2 nonattainment areas based upon dispersion modeling analysis. The SO_2 regulation in effect since September 1979 was promulgated by EPA Region V. The SIP emission limits for fuel burning facilities specify on a source-by-source basis the maximum SO_2 emissions permitted. Most sources were required to achieve SO_2 compliance by August 27, 1979; but coal-fired boilers at facilities owned by the General Motors Corporation and Dayton Power & Light Company were permitted a delay until June 17, 1980. This regulation should produce SO_2 attainment by 1982 in the currently nonattainment parts of Montgomery and Greene Counties. Although EPA Region V conditionally approved the SO_2 portion of the Ohio SIP in June 1980, the State must supply additional background information before final acceptance by EPA. The Ohio regulations generally allow SO_2 emissions greater than those permitted by the EPA Region V proposals.

3.2.2 Implementation Delays

Other than the extensive problems encountered with adoption of the SO_2 regulations, delays resulted from the short time allocated for preparation of the 1979 SIP. Changing the O_3 limit from 0.08 to 0.12 ppm caused a little difficulty in timely plan submittal. The resources spent on the O_3 strategy, contributed to the delay in submission of information to OEPA for the TSP portion of the 1979 SIP.

As shown in Table 3-1, completion of the SO_2 portion of the SIP was delayed considerably. In 1973, the SIP was challenged in the U.S. Sixth Circuit Court of Appeals. A group of industrial entities asked that the court require the EPA Administrator to withdraw approval of the State SIP because adequate time for comments, as specified in the Clean Air Act, had not been provided. The court ruled in favor of the plaintiffs and required the Administrator to withdraw approval. During the ensuing comment period, the Governor of Ohio withdrew the SIP from federal consideration. In May 1974, OEPA submitted a regulation specifying new SO_2 emission limits by county and source. The Environmental Board of Review (EBR), in response to litigation by Ohio utilities, overturned the SO_2 control regulation in September 1974. Because the regulations were then unenforceable by the State, the Governor again withdrew the SIP. This withdrawal forced EPA Region V to prepare an SO_2 plan for Ohio. The Federal version of the SIP, which was promulgated in 1976, was subsequently challenged by utility and industrial interests. The net result of the litigation was a delay in applicability (affecting petitioners only) until mid-1977. It now appears that the EPA Regional Administrator may approve the State submittal as an alternative plan. During these legal battles, State enforcement of the SO_2 portion of the SIP was continued against all entities except those involved in the litigation described. Because the 1972 SIP included TSP with SO_2, the TSP portion was also delayed (for roughly 2 years).

3.2.3 Emission Reductions

The 1972 SIP indicated that TSP emissions in the Dayton AQCR needed to be reduced from 89,710 to 37,000 tons/yr to achieve the primary national standard. Achievement of the secondary standard required that TSP emissions not exceed 25,000 tons/yr. Although projections suggested that TSP regulations governing stationary sources, would reduce emissions to 20,225 tons/yr, roughly 100 stationary sources remained out of compliance in 1975.

Hydrocarbon (HC) emissions were estimated to be 170,000 tons/yr before implementation of the 1972 SIP strategies. Calculations indicated that achievement of NAAQS required reduction of HC emissions to only 69,000 tons/yr. The switch to exempt solvent and implementation of transportation control measures were expected to reduce HC emissions to 105,000 tons/yr by 1975, and the FMVCP was projected to reduce emissions to 84,000 tons/yr by 1977. The OEPA requested an extension of the compliance deadline by 2 years (to 1977). The national standard was not achieved in 1977, primarily because many of the exempt solvents have since been determined to be photochemically reactive.

According to emission inventory estimates, 152,000 tons of NO_x were emitted in the Dayton AQCR during 1972. Attainment of the national standard required that NO_x emissions not exceed 72,000 tons/yr. Greater use of motor vehicles and increased generation of electricity were expected to cause an increase of NO_x emissions to 154,000 tons/yr by 1975. Projections for 1977

predicted a reduction to 139,000 tons/yr because of the FMVCP. Table 3-2 lists pollutant control strategies in the 1972 and 1979 SIP's and provides other SIP information.

Information from the emission inventory indicates that only 10 percent of the 1977 TSP and VOC emissions came from sources out of compliance. Such sources emitted only 1500 tons of VOC/yr and 10,000 tons of TSP/yr by the deadline of August 7, 1977, and only 1000 tons of VOC/yr and 7500 tons of TSP/yr by the deadline of July 1, 1979. The main reason for failure to attain the national O_3 standard was that the original SIP allowed sources to achieve compliance by switching to exempt solvents.

3.2.4 Enforcement Activities

Since 1972, enforcement programs have become increasingly sophisticated. Although enforcement methods have changed, the purpose has always been to achieve compliance with regulations. Although some sources do not fear the legal consequences of noncompliance, many do. As Table 3-3 shows, most sources in the RAPCA region are in compliance or are following a compliance schedule without the need for administrative orders or prosecutions.

In 1970 there were 1100 HC and TSP sources out of compliance. By 1977 only 100 sources were not in compliance. Since 1977, 75 of these have voluntarily reached compliance. Only 50 to 60 enforcement actions, such as Section 113 orders, were needed between 1972 and 1979. Because these are limited legal actions, they have only slightly affected manpower allocations for other activities.

TABLE 3-2. SIP INFORMATION: DAYTON AQCR

Pollutant	SIP	Strategy	Emission reduction needed for attainment, tons/yr	Projected emission reduction by NAAQS deadline, tons/yr
TSP	1972	Source category regulation	64,710	68,485
Photo-chemical oxidants	1972	Exempt solvent regulation and TCM's	101,000	86,000[a]
SO_2	1972	Source-by-source regulation	c	c
NO_x[b]	1972	None		
TSP	1979	RACT, fugitive dust regulation, study of nontraditional sources	c	c
O_3	1979	RACT, FMVCP, TCM's	29,160	32,080
SO_2	1979	Source-by-source regulation	c	c

[a] With 2-year extension (i.e., by 1977).

[b] The EPA declared Ohio an NO_x attainment area on May 8, 1974.

[c] Data not available.

TABLE 3-3. ENFORCEMENT INFORMATION: DAYTON AQCR

Sources subject to strategy	4500 in 1972
Sources in compliance	3400 in 1972
Sources out of compliance	1100 in 1972 100 in 1977 25 in 1979
Investigation of noncompliance	320 in 1979
Sources voluntarily in compliance	1000 from 1972 to 1979
Enforcement actions	50 to 60 from 1972 to 1979
Portion of base year emissions from sources out of compliance	10% in 1977
Relationship between noncompliance and nonattainment	None; nonattainment caused by nontraditional TSP sources
Emissions from sources out of compliance	As of August 7, 1977: 10,000 tons TSP/yr 2,000 tons SO_2/yr 1,500 tons VOC/yr As of July 1, 1977: 7500 tons TSP/yr 500 tons SO_2/yr 1000 tons VOC/yr
Effect of enforcement actions	Necessary for some sources; no adverse effects on other activities of RAPCA staff

Investigators determine the status of compliance for a particular source in a variety of ways. Stack tests by EPA-approved source sampling methods are required for all new sources. Whether existing sources are in compliance can be determined by calculations based on information about fuel characteristics, emission factors, and material balances. Visible emissions are also used to evaluate compliance. During 1979, RAPCA responded to 300 complaints about industrial sources.

3.3 SOUTHWESTERN OHIO AIR POLLUTION CONTROL AGENCY

Since 1886, the city of Cincinnati has funded an air pollution control program for the area. Cincinnati provided the major local funding for SWO-APCA until early 1979; the reduction in funding was picked up primarily by Hamilton County, although Clermont, Butler, and Warren Counties also provided support. By contract with OEPA, SWO-APCA has complete enforcement and program development responsibilities for air pollution control in these four counties. All four counties are included in this study. During preparation of the 1972 SIP, however, Clermont County was under the jurisdication of the Southwest District Office of OEPA.

3.3.1 Strategy Schedules

The NAAQS for TSP, SO_2, photochemical oxidant, and NO_x standards were not being met in the region at the time of submission of the 1972 SIP. As in the case of the Dayton AQCR, the State prepared the TSP and SO_2 stationary source regulations for the Cincinnati AQCR. Regulations for the Cincinnati AQCR region were not as stringent as those for the Dayton AQCR. As

Table 3-1 indicates, the SIP was submitted to the Administrator on January 31, 1972, and approved September 22, 1972. In a suit filed in the U.S. Sixth Circuit Court of Appeals, Buckeye Power and others complained that the EPA Administrator had not followed Clean Air Act provisions requiring sufficient time for comments on the SIP. The EPA then withdrew approval and provided sufficient time for industry to comment, and the State resubmitted the plan in November 1973. The SIP was approved in April 1974 except for the SO_2 portion, which had been withdrawn by the State. This delayed the deadline for TSP attainment until April 1977.

Because the Cincinnati AQCR was determined to be a nonattainment area only for the secondary SO_2 standard, it was permitted until July 1978 to achieve attainment. A county-by-county, source-by-source regulation was resubmitted by OEPA to satisfy SIP requirements and show achievement of NAAQS. In September 1974 the regulation was challenged on procedural grounds, and the SIP was withdrawn. In August 1976 the county-by-county, source-by-source version of the regulation was adopted. In September 1976, however, a group of 32 Ohio corporations and electric utilities challenged the regulation. An amended version of the regulation was adopted on May 31, 1977. Despite several other activities, the Federal plan remained in effect until June 1980, when EPA announced conditional approval of the State version of the SO_2 plan. Both the Federal and State versions of the SIP indicated that attainment would be achieved through compliance with the proposed stationary source regulations.

The 1972 SIP contained a two-part strategy for achievement of the photochemical oxident standard. First, the State developed a new solvent regulation limiting emissions of certain organic materials considered photochemically reactive. Other organic materials were considered "exempt" and could be used. Many sources came into compliance by switching to exempt compounds. Second, benefits from the FMVCP were calculated. Projections indicated that the two-part strategy would not produce attainment by the deadline of July 1975, but could do so by 1977. In 1975, an I/M program was put into effect in the cities of Cincinnati and Norwood to reduce VOC and NO_x emissions from motor vehicles. Hamilton County operated a voluntary I/M program for 6 months which was directed toward owners of vehicles outside of the City of Cincinnati.

Information obtained during a 1971 summer study was used to determine that the area was not achieving the national NO_x standard. The only emission control strategies for NO_x control included in the 1972 SIP were the FMVCP and limited controls provided by the new regulations governing stationary combustion sources. Because it was determined that the NO_x standard would not be met by the deadline of 1975, a 2-year extension was requested. On May 8, 1974, EPA announced that Ohio would be considered an NO_x attainment area. The improper designation of nonattainment was caused by problems with the reference method used for NO_x monitoring.

The OEPA prepared all parts of the 1979 SIP affecting the SWO-APCA region except the O_3 portion, which was prepared by OKI

with the help of SWO-APCA. Data indicated that the entire region was an O_3 nonattainment area and that portions of Butler, Clermont, and Hamilton Counties were TSP and SO_2 nonattainment areas.

The TSP portion of the 1979 SIP was adopted by the State in June 1980. Attainment is partially related to compliance with new RACT regulations that are source category specific. The TSP strategy also indicates varying dates for attainment of standards. Warren County was required to achieve the primary and secondary TSP standards by April 15, 1977. Clermont County was required to meet the primary TSP standard by April 15, 1977, and the secondary TSP standard by December 31, 1987. The affected portions of Butler and Hamilton counties must reach attainment of primary standards by 1982 and of secondary standards by 1987. Nonattainment of NAAQS also appears to be related to fugitive dust and nontraditional sources of TSP. Most stationary sources are controlled to the RACT level, and some are at BACT. Presently, SWO-APCA is studying reasonable control measures for nontraditional sources.

The history of the SO_2 portion of the Ohio SIP has been explained earlier in this section. Attainment of NAAQS should result from compliance with the stationary source regulations. Sources within Butler County are permitted until September 1982 to achieve compliance. The following were required to be in compliance by June 17, 1980: sources owned by the General Motors Corporation; the Beckjord and Miami Fort Stations of Cincinnati Gas & Electric Company; the Hooven plant of the Gulf Oil Company;

and the Fort Hill Plant of E. I. du Pont de Nemours & Company. All other sources were to achieve compliance by August 27, 1979.

As mentioned, OKI with the assistance of SWO-APCA prepared the O_3 portion of the 1979 SIP, which was adopted in May 1979. The strategies required RACT for stationary VOC sources, new regulations for sources not subject to RACT requirements, vapor recovery requirements, the FMVCP, TCM's, and an I/M program. Some TCM's were already under way, such as public transit improvements, park and ride lots, pedestrian malls, bicycle facilities, and traffic flow improvements. Other measures were to be implemented during 1979, such as additional public transit improvements, more park and ride facilities, and additional traffic flow improvements. Still other measures were to be implemented between 1979 and 1983, such as Stage I vapor recovery at service stations, areawide I/M, additional traffic flow improvements, establishment of automobile-restricted zones, additional bicycle facilities, and transit system improvements. Successful implementation of these strategies should result in attainment by 1984.

3.3.2 Implementation Delays

The information provided to OEPA for preparation of the SIP's was delayed for several reasons. First, SWO-APCA lacked sufficient staff to gather information for the 1972 SIP within the alloted time. Second, because industry challenged the emission limits proposed in the regulations, SWO-APCA staff spent considerable time at hearings. Third, some of SWO-APCA's efforts

in gathering information for the 1979 SIP were noted because of the change in the national O_3 standard; and four, lack of guidance also resulted in delays.

Implementation of the TSP and SO_2 portions of the 1972 SIP was delayed by the legal activities discussed in subsection 3.2. Sources that could have been in compliance by the 1975 deadline were permitted to obtain a variance and delay compliance. Some TSP sources did not comply with the regulations until April 1980.

3.3.3 Emission Reductions

Table 3-4 shows the emission reductions required by the SIP's. The 1972 SIP estimated TSP emissions at 148,686 tons/yr. Calculations indicated that the required reduction would be achieved by applying stationary source emission regulations. The specific reduction required is not available.

When the 1972 SIP was initially prepared, SO_2 emissions were estimated at 288,714 tons/yr. Calculations in the SIP indicated that a reduction to 268,000 tons/yr was required to meet the secondary national standard. Thus, only a 7 percent reduction was necessary. Compliance with the new stationary source regulations was estimated to produce a 21 percent reduction. Nonattainment was associated primarily with emissions from coal-fired power plants in the area.

Hydrocarbon emissions were estimated to be 181,359 tons/yr in the 1972 SIP. Rollback calculations indicated that a 45 percent reduction in emissions was necessary to attain the national standard for O_3. Switching to exempt solvents and the

TABLE 3-4. SIP INFORMATION: CINCINNATI AQCR

Pollutant	SIP	Strategy	Base year emissions, tons/yr	Maximum allowable attainment emissions, tons/yr	Projected emissions, tons/yr
TSP	1972	Source category regulation	148,686	a	a
SO_2	1972	Source-by-source regulation	288,714	268,000[b]	225,890
Photo-chemical oxidants	1972	Exempt solvent regulation, FMVCP; later, I/M required for Hamilton County	181,359	99,748	112,443 by 1975; 90,680 by 1977
NO_x[c]	1972		148,641	84,725	148,641 by 1975; 142,695 by 1977
TSP	1979	RACT, control of fugitive dust from nontraditional sources	15,020[d]	a	a
SO_2	1979	Source-by-source regulation	131,351[d]	a	a
O_3	1979	RACT, TCM's, FMVCP, I/M	122,756	62,606	74,267 by 1982; 52,785 by 1987

[a] Data not available.

[b] Secondary standard.

[c] The EPA declared Ohio an NO_x attainment area on May 8, 1974.

[d] Hamilton County emissions in 1977.

FMVCP were expected to produce a 38 percent reduction by 1975. Although the strategy estimated that a 50 percent reduction could be realized by 1977, this reduction did not occur because compounds considered exempt in the 1972 SIP were no longer exempt in the 1979 SIP. Additionally, the impact of the I/M strategy through all of Hamilton County has not yet been realized.

The 1972 SIP estimated NO_x emissions to be 148,641 tons/yr. Attainment of the national standard required a 43 percent reduction in NO_x emissions by 1975. The limited control strategy indicated that emissions would not change by 1975 and that only a 4 percent reduction would occur by 1977. The strategies did not affect ambient emission levels, and the FMVCP prevented any significant increase.

In sections prepared by OKI, the 1979 SIP indicated that 1975 base year emissions of VOC totaled 122,756 tons/yr. Attainment of the new national standard of 0.12 ppm requires a 40 percent reduction. Calculations indicate that RACT will provide a 13.9 percent reduction by 1982. Various TCM's in addition to the FMVCP should reduce VOC emissions by 24.5 percent, and the I/M plan is expected to reduce VOC emissions by 1.2 percent. These strategies should almost produce attainment by 1982 and result in a 57 percent reduction by 1987; thus, a substantial emission "cushion" will be obtained.

Failure to achieve NAAQS by 1975 was caused primarily by sources out of compliance. Of major concern were TSP sources. In 1972, only about 30 percent of the 5500 sources were in

compliance. Lack of compliance, however, is not the cause of the present nonattainment because only five major TSP sources and two major SO_2 sources were out of compliance in 1979. The TSP problem now appears to be related to nontraditional sources of pollution rather than stationary point sources. Ozone nonattainment can be attributed to the earlier exempt solvent regulation and mobile source emissions.

3.3.4 Enforcement Activities

Enforcement activities by SWO-APCA have differed from those in other parts of the study area. In 1975, Cincinnati and Norwood became the first U.S. cities to operate a mandatory I/M program. The Cincinnati and Norwood police departments are responsible for enforcement of the I/M program. Because enforcement is a low priority of departments, the number of vehicles cited has dropped in recent years.

Stationary source noncompliance was investigated in response to citizen complaints. In Hamilton County, 382 complaints were investigated in 1979. In the entire SWO-APCA regions, 683 complaints were investigated that year.

Voluntary compliance with stationary source regulations has increased since the Clean Air Act of 1970. Industry was not certain how seriously air pollution control regulations would be enforced. Voluntary compliance frequently is aided by the presence of inspectors and occasionally by a notice of violation. Generally, little further legal activity is required. Since 1972, there have been 520 enforcement actions, including 500

administrative orders and 20 prosecutions. In 1979, 229 notices were written, 2079 warnings were issued, and 6 companies received hearing notices. The only major SO_2 sources not in compliance with regulations are the Hamilton Municipal Power Plant and the E.I. du Pont sulfuric acid plant. Nonattainment of the national TSP standard is related to fugitive dust and emissions from nontraditional sources.

Compliance with regulations is determined not by emission calculations, but by source tests or evaluations of visible emissions. The type and size of control equipment dictate whether a source test is necessary. Investigators observe stack tests and review reports of stack tests. Table 3-5 lists information on tests from 1974 to 1978.

TABLE 3-5. ENFORCEMENT INFORMATION: CINCINNATI AQCR

Sources subject to strategy	5500 from 1972 to 1979 101 major allowable sources according to 1972 SIP 96 major allowable sources according to 1979 SIP
Sources in compliance	Roughly 95 to 98% in 1979 Roughly 30% in 1972
Sources out of compliance	5 major TSP and 2 major SO_2 sources in 1979
Investigations of noncompliance	All four counties: 683 in 1979 Hamilton County: 494 in 1975 534 in 1976 470 in 1977 386 in 1978 382 in 1979
Steps taken before enforcement action	Hamilton County: 229 written notices in 1979 2079 warnings in 1979 6 plants received hearing notices in 1979
Enforcement actions	520 from 1972 to 1979, including 500 administrative orders and 20 prosecutions
Motor vehicles inspected	Cities of Cincinnati and Norwood: 184,000 (28.5% of which failed) in 1975 221,000 (18% of which failed) in 1976 197,000 (16.5% of which failed) in 1977 185,000 (19.3% of which failed) in 1978 146,000 (18.4% of which failed) in 1979

(continued)

TABLE 3-5 (continued)

Stack tests	21 tests observed and 8 reports reviewed in 1974 35 tests observed and 13 reports reviewed in 1975 32 tests observed and 9 reports reviewed in 1976 7 tests observed and 2 reports reviewed in 1977 47 tests observed and 14 reports reviewed in 1978

SECTION 4

IMPLEMENTATION AND ENFORCEMENT IN KENTUCKY

4.1 KENTUCKY DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

In 1973, the Kentucky Air Pollution Control Commission became the Kentucky Department of Natural Resources and Environmental Protection. The State of Kentucky is divided into nine regions, which contain roughly 1200 sources with air pollution permits. Three Kentucky air quality control regions are in the study area: the Cincinnati AQCR (Boone, Campbell, Carroll, Gallatin, and Kenton Counties), the North Central AQCR (Bullitt, Trimble, and Oldham Counties), and the Louisville AQCR (Jefferson County). The KDNREP is responsible for air pollution control in all AQCR's with the exception of the Louisville AQCR, which is under the jurisdiction of the JCAPCD.

4.1.1 Strategy Schedules

Determination of TSP and SO_2 attainment status in the 1972 SIP depended primarily on measured air quality data. Because negligible monitoring data were available on photochemical oxidant and NO_x levels, a 3-month study was conducted in Louisville during the summer of 1971 to determine whether NAAQS were being exceeded. Data from the study were applied to the Cincinnati, North Central, and Louisville AQCR's. It showed that the

Cincinnati AQCR was exceeding primary NAAQS for TSP, NO_x, and photochemical oxidants and the secondary standard for TSP. Based on these results, attainment strategies were included in the 1972 SIP.

The Louisville AQCR was used as an example area in determining TSP and SO_2 strategies for all of the Kentucky AQCR's. The decision to use Louisville was based upon a number of factors including the availability of monitoring data, the area was not achieving NAAQS, it is a major industrial area, and the area included a major city. Strategies designed for achievement of NAAQS in the Louisville KAQCR would also provide for attainment in the other KAQCR's. The strategies required enforcement of stationary source category regulations dealing primarily with fuel combustion, incineration, various industrial processes, and fugitive dust.

Table 4-1 indicates that the TSP and SO_2 portions of the plan went through several legal activities. In November 1971, the Kentucky Air Pollution Control Commission held public hearings concerning the SIP. The plan was submitted to EPA on February 8, 1972, and approved on May 31, 1972. Because the Kentucky Air Pollution Control Commission was abolished in 1973, the SIP had to be resubmitted. Also during 1973, a suit expressing dissatisfaction with SIP procedures was filed with the U.S. Sixth Circuit Court of Appeals; the court ruled in favor of the plaintiff. The KDNREP added an indirect source regulation and submitted the SIP in December 1973. Except for a provision dealing with alternative SO_2 strategies, this plan was approved

TABLE 4-1. HISTORICAL INFORMATION: KENTUCKY SIP

Action	Date	Comments
Public hearings held on SIP	January 1972	Workshops held November 20 and December 4, 1971
SIP submitted	February 8, 1972	
SIP approved	May 31, 1972	
Hearing on open burning regulations and operational control strategy	July 25, 1972	
LG&E given 4-year extension for SO_2 compliance by JCAPCD	June 20, 1973	LG&E required to complete new generating unit to replace three older units
Decision by U.S. Sixth Circuit Court of Appeals	June 28, 1973	SIP approval rejected because interested parties were not permitted to comment
Federal facilities not required to comply with state air pollution control regulations	July 9, 1973	Ruling later appealed
Resubmittal of SIP	December 5, 1973	Added regulation on indirect sources
U.S. Sixth Circuit Court of Appeals rules Federal facilities do not need State permits	June 5, 1974	
Approval of SIP except for Alternate Control Strategies	August 15, 1974	Re-examination of SO_2 strategy required, 2-year extension still allowed
Federal compliance schedule proposed for fuel burning sources	December 5, 1974	

(continued)

TABLE 4-1 (continued)

Action	Date	Comments
Strategy for SO_2 and TSP portions of SIP revised	August 30, 1975	
EPA approved compliance schedule by category for indirect heat exchangers as part of SIP	September 2, 1975	
U.S. Sixth Circuit Court upheld EPA requirement of constant emission controls	September 15, 1975	
U.S. Ninth Circuit Court ruled that EPA could not penalize states for failure to include TCM's in SIP's	September 15, 1975	
Revision to SIP	December 16, 1975	Inclusion of compliance schedules and NESHAPS, limits on 12 new sources, revision of existing limits on 5 sources
EPA approved SIP revision concerning SO_2 strategy	May 10, 1976	Only exception was the part of the strategy on NSPS governing boilers
Revised strategy adopted	July 14, 1976	
EPA requested more comments on revision to SO_2 portion of SIP revision	December 30, 1976	
President Carter declared regional emergency, suspended TSP and SO_2 regulations to conserve fuel	February 3, 1978	Coal shortage
KDNREP planned hearings on amendments to regulations	January 9, 1979	

(continued)

TABLE 4-1 (continued)

Action	Date	Comments
KDNREP planned hearings on SIP in Frankfort	June 7, 1979	
EPA requested comments on revisions to TSP, SO_2, and O_3 portions of SIP	July 24, 1979	
EPA disapproved some revisions to SIP	December 15, 1979	
EPA approved SIP revision concerning O_3 nonattainment under certain conditions	January 25, 1980	Revision of TCM and VOC regulations required by June 1, 1980
EPA approved compliance date extensions for SO_2 in Louisville, and O_3 in Jefferson, Boone, Campbell, and Kenton Counties	January 25, 1980	Extensions last until December 31, 1987
EPA extended comment period concerning Section 125	May 2, 1980	

in August 1974. The revised TSP and SO_2 strategies were submitted on August 30, 1975, and adopted on July 14, 1976. Results of the 3-month study conducted in the summer of 1971 were then used in a proportional model to determine reduction strategies necessary for meeting NAAQS.

The photochemical oxidant strategy developed for the 1972 SIP in the Kentucky portion of the Cincinnati AQCR initially included only improvements caused by modifications of point sources and benefits from the FMVCP. Because projections indicated that these strategies would not provide attainment of NAAQS until 1978, an exempt organic material regulation and open burning and incineration regulations were added. These additional measures were projected to provide attainment by 1975, although the new organic material regulation did not provide any real reduction in HC emissions.

Analysis of the NO_x problem in the Cincinnati AQCR showed that the FMVCP, RACT, and other associated measures would not reduce emissions sufficiently to attain the national NO_x standard by 1975. Because TCM's were complex and required a significant lead time, the national standard would not be met even by 1977. On May 8, 1974, however, EPA ruled that problems with the reference method used in monitoring NO_x were being investigated and that all areas were thus determined to be attainment or unclassified.

The 1979 Kentucky SIP was approved in June 1979. Attainment status for TSP and SO_2 NAAQS was determined from monitoring data,

modeling, and compliance of major sources located in the Cincinnati and North Central AQCR's. Data indicated that the cities of Newport (Cincinnati AQCR) and Shepherdsville (North Central AQCR) were TSP nonattainment areas. There are no SO_2 nonattainment areas in either the North Central or the Kentucky portion of the Cincinnati AQCR. Based on monitoring data in the Cincinnati AQCR, Boone, Campbell, and Kenton Counties were considered O_3 nonattainment areas. There are no SO_2 nonattainment areas in either the North Central or the Kentucky portion of the Cincinnati AQCR. Based upon monitoring data in the Cincinnati AQCR, Boone, Campbell, and Kenton Counties were considered O_3 nonattainment areas.

Development of control strategies for TSP for these two cities involved preparing emission inventories and projecting emissions to 1987. Because the stationary source regulation developed in the 1976 revision was determined to represent RACT, it was concluded that nontraditional sources of TSP must be investigated. Procedures for strategy implementation affecting nontraditional sources are to be determined during 1980, so that implementation will occur by July 1982 and attainment by December 31, 1982. A revised SIP must be submitted by July 1, 1982. In the cities of Newport and Shepherdsville, RACT regulations are already in force. Linear rollback modeling indicated that attainment of the NAAQS for TSP would occur in both cities after emissions from paved and unpaved roads are controlled.

Industries in the Cincinnati AQCR already use RACT for VOC sources. Additionally, OKI developed transportation control

strategies. Of the 18 strategies considered, some have been dismissed as not feasible, others implemented, and still others will be implemented soon or in a few years. The measures implemented between 1975 and 1978 were traffic improvements, separation of pedestrian and motor vehicle traffic in shopping areas, and expansion of mass transit systems. Measures that were to be implemented during 1979 included improvements in mass transit systems and traffic flows, and establishment of park-and-ride lots. The strategies to be implemented between 1980 and 1983 include use of Stage I vapor recovery; improvements in mass transit systems, traffic flows, and park-and-ride lots; and establishment of an I/M program, bicycle facilities, and zones where automobiles are prohibited. In 1979 and 1980, the impact of an additional group of strategies was also to be studied. It was determined, however, that attainment could not be achieved by 1982 and that even the establishment of an I/M program would not produce attainment until 1984.

4.1.2 Implementation Delays

Numerous legal problems associated with approval of the TSP and SO_2 portions of the 1972 SIP resulted in delays in the implementation of the plan. Additionally, the organic material regulation provided for a delay in the achievement of standards. Finally, the KDNREP has frozen hiring and is required to reduce its staff by 5 percent. Lack of personnel contributed significantly to lack of enforcement after adoption of the SIP.

4.1.3 Emission Reductions

Table 4-2 lists the strategies for reducing existing emissions. Diffusion modeling in the 1972 SIP indicated TSP attainment required the reduction of uncontrolled emissions by 85 percent in the Cincinnati and the North Central AQCR's. As mentioned, this strategy relied upon using the Louisville AQCR as the example for strategy development in all AQCR's not meeting the NAAQS. Base year TSP emissions were 108,858 tons/yr in the Cincinnati AQCR and 117,717 tons/yr in the North Central AQCR. Because the North Central AQCR exceeded only the secondary standard, attainment seemed assured.

The SO_2 strategy in the 1972 SIP required a 25 percent reduction of uncontrolled emissions in the Cincinnati AQCR. This strategy also relied upon using the Louisville AQCR as the example region from which to base emission reductions. Emission inventory calculations indicated that only 2687 tons SO_2/yr were emitted in the Cincinnati AQCR. The emission reductions from measures in the SIP should provide attainment because the Kentucky portion of the Cincinnati AQCR only exceeded the secondary standard.

Proportional modeling indicated that the Cincinnati AQCR needed to reduce HC emissions 32 percent by 1975. The FMVCP and minimal source modifications were projected to reduce emissions by 20.4 percent by 1975 and 31.5 percent by 1977. Emission projections indicated that the standard could be achieved by 1978. With the addition of the exempt organic material regulation and the new open burning and incineration regulations, a

BLANK PAGE

TABLE 4-2. SIP INFORMATION: CINCINNATI AND NORTH CENTRAL AQCR'S IN KENTUCKY

Pollutant	AQCR	SIP	Strategy	Base year emissions, tons/yr	Maximum allowable attainment emissions, tons/yr	Effect of strategy on emissions
TSP	Cincinnati	1972	Source category regulation	108,858	a	Reduction of uncontrolled emissions by 85%
TSP[b]	North Central	1972	Source category regulation	117,717	a	Reduction of uncontrolled emissions by 85%
SO_2	Cincinnati	1972	Source category regulation	2,687	a	Reduction of uncontrolled emissions by 25%
Photochemical oxidants	Cincinnati and North Central	1972	Exempt solvent regulations, FMVCP, other regulations	27,628	18,787	Reduction to 17,019 tons/yr
NO_x[c]	Cincinnati and North Central	1972	RACT, FMCVP	21,101	11,859	Reduction to 21,734 tons/yr by 1977
TSP and SO_2	Cincinnati and North Central	1976	Source category regulation	a	a	a
TSP	North Central; city of Shepherdsville	1979	Study of nontraditional sources, control of paved and unpaved roads	1,412	1,327 by 1982 675 by 1987	Reduction to 970 tons/yr by 1982 Reduction to 450 tons/yr by 1987

(continued)

TABLE 4-2 (continued)

Pollutant	AQCR	SIP	Strategy	Base year emissions, tons/yr	Maximum allowable attainment emissions, tons/yr	Effect of strategy on emissions
TSP	Cincinnati; city of Newport	1979	Study of nontraditional sources, control of paved and unpaved roads	964	415 by 1982 366 by 1987	Reduction to 502 tons/yr by 1982 Reduction to 286 tons/yr by 1987
O_3	Cincinnati	1979	RACT, TCM's, I/M	16,927	10,156	Reduction to 11,737 tons/yr by 1982 Reduction to 9,358 tons/yr by 1987

[a] Data not available.

[b] Secondary standard only.

[c] The EPA declared Kentucky an unclassified or attainment area for NO_x on May 8, 1974.

38.4 percent reduction was projected by 1975. Although this appeared to provide more than enough reduction in emissions to attain the national standard, the exempt HC regulation was later determined to do little to reduce ambient O_3 levels.

Emissions of NO_x in the 1972 SIP were estimated to be 21,101 tons/yr. Proportional modeling indicated NO_x emissions needed to be reduced by 43.8 percent. Despite the FMVCP, estimates indicated a 10 percent increase in NO_x emissions by 1975 and an 8 percent increase by 1977. When emission reductions from RACT regulations were added to those from the FMVCP, the increase was expected to be 3 percent by 1977. Estimates indicated that the national NO_x standard would not be achieved by 1975 or 1977 because the TCM's would be too complex to implement and lead time would be insufficient. In 1974, the EPA declared Kentucky an unclassified or attainment area for NO_x because of problems associated with reference methods used in ambient monitoring.

Strategies in the 1976 revisions to the TSP and SO_2 portions of the SIP improved air quality such that only the cities of Shepherdsville (in Bullitt County) and Newport (in Campbell County) required TSP strategies in the 1979 SIP. No SO_2 strategy was needed because the secondary SO_2 standard was no longer exceeded in the Cincinnati AQCR.

The 1976 emission inventory developed for Shepherdsville indicated point sources emitted 57 tons TSP/yr and area sources emitted 1412 tons TSP/yr. Linear rollback modeling showed that a 6 percent reduction was necessary to achieve the primary standard and a 38 percent reduction, to achieve the secondary standard.

The nontraditional source strategy, which must be submitted by July 1, 1982, requires a 44-ton/yr reduction in TSP emissions from paved roads and a 400-ton/yr reduction in TSP emissions from unpaved roads by December 31, 1982. Attainment of the secondary standard by December 31, 1987, requires 105-ton/yr reduction in TSP emissions from paved roads and an 857-ton/yr reduction in TSP emissions from unpaved roads.

In Newport, the 1976 emission inventory showed that point sources emitted 79 tons TSP/yr and area sources emitted 964 tons TSP/yr. Linear rollback modeling indicated that a 43 percent reduction would be necessary for primary standard attainment and a 62 percent reduction, for secondary standard attainment. This means that the 1982 SIP revision must show a method for reducing TSP emissions from paved roads by 74 tons/yr and from unpaved roads by 388 tons/yr before December 31, 1982. The strategy must further provide for a 144-ton/yr reduction of TSP emissions from paved roads and a 534-ton/yr reduction of TSP emissions from unpaved roads by December 31, 1987.

Ambient O_3 levels continued to be a problem in the Kentucky portion of the Cincinnati AQCR. Boone, Kenton, and Campbell Counties are all nonattainment and contributed 16,927 tons/yr of the 117,051 tons/yr from the entire Cincinnati AQCR. According to EKMA, a 40 percent reduction in VOC emissions is needed to attain the new O_3 standard of 0.12 ppm. This means that VOC emissions must be reduced to 10,156 tons/yr for attainment. If no additional control strategies beyond those presently in force are added, emissions will be 13,245 tons/yr by 1982. The RACT

controls presently installed have reduced VOC emissions by 823 tons/yr; an additional reduction of 138 tons/yr is expected from future installations. Altogether, these will amount to only a 4 percent reduction in total VOC emissions from the three counties. The OKI investigated 18 TCM's to obtain the further reductions needed, but found that the measures will not produce attainment. An I/M program with a 30 percent failure rate was also examined. All these strategies (the RACT regulations, TCM's, and I/M program) should reduce VOC emissions to 11,737 tons/yr by 1982 and to 9358 tons/yr by 1987. Interpolation of the emission levels indicates that attainment will occur some time in 1984.

The KDNREP believes that sources out of compliance in the Cincinnati and North Central AQCR's had little effect on base year emissions. Of the areas in the Ohio River Valley study, Jefferson County is the only one where sources out of compliance significantly affected base year emissions. The primary problem in the Cincinnati and North Central AQCR's is the regional contribution of mobile source VOC emissions and nontraditional sources of TSP.

4.1.4 Enforcement Activities

Early in the SIP program, construction of a few sources in the Cincinnati AQCR began without proper permits. This problem was corrected, and a penalty was imposed. Generally, there has been little need for enforcement activity in the Cincinnati and North Central AQCR's. The KDNREP indicated that the existence of the regulations in conjunction with inspections has resulted in

voluntary compliance. For the most part, only notices of violation have been necessary to bring sources into compliance. As seen in Table 4-3, no actions have been referred to the Attorney General. The penalities of noncompliance appear to have proved a deterrent.

Compliance with regulations has progressed well since the Clean Air Act of 1970. In 1979, no major sources were out of compliance. The 22 sources that were out of compliance emitted only 61 tons of TSP, 2 tons of SO_2 and 541 tons of VOC.

Investigators from the KDNREP responded to 49 complaints about noncompliance during 1979. A permit is not issued to a source until its compliance schedule is complete. Investigators determine compliance status through evaluations of visible emissions, stack tests, routine field investigations, and reviews of annual reports submitted by companies. The method selected depends upon the type of source and the pollutant emitted. A hiring freeze and mandatory staff reduction, however, have reduced the number of investigative actions.

4.2 JEFFERSON COUNTY AIR POLLUTION CONTROL DISTRICT

The JCAPCD, located in Louisville, is the only local agency in Kentucky having responsibility for an air pollution control program in the study area. In December 1970, JCAPCD was granted authority to adopt and enforce air quality rules and regulations in Jefferson County, Kentucky. This designation also provided the responsibility for assistance in the preparation and enforcement of SIP's.

TABLE 4-3. ENFORCEMENT INFORMATION:
CINCINNATI AND NORTH CENTRAL AQCR'S IN KENTUCKY

Sources subject to strategy	9 major allowable sources according to 1972 SIP 7 major allowable sources according to 1979 SIP
Investigations of noncompliance	49 in 1979
Sources voluntarily in compliance	All
Sources out of compliance	22 in 1979; no major sources
Enforcement actions	None in 1979
Relationship between noncompliance and nonattainment	None; nonattainment caused by nontraditional sources and regionwide motor vehicles
Effect of enforcement actions	Necessary as a deterrent

4.2.1 Strategy Schedules

Monitoring data obtained from the JCAPCD network prior to 1972 indicated that ambient air quality levels for TSP and SO_2 exceeded NAAQS. Emission reductions necessary to achieve NAAQS were estimated by diffusion modeling. Also, data obtained during a 3-month summer study in Louisville and adjusted to represent annual values indicated exceedances of the photochemical oxidant and NO_x standards. Reductions necessary for attainment were determined by proportional modeling.

The Louisville portion of the Kentucky SIP was approved by the State on February 1, 1972. The State submitted the total SIP on February 8, 1972, and the plan was approved by the EPA on May 31, 1972. The TSP and SO_2 strategies in the SIP consisted of enforcement of new emission limits for fuel combustion sources, incinerators, industrial processes, and sources of fugitive dust emissions. The regulations limited the types of fuels used and required better operating practices. Diffusion modeling results indicated that compliance with these regulations would provide achievement of the primary and secondary standards for TSP and SO_2 by 1975.

As indicated in Table 4-1, a suit was filed before the U.S. Sixth Circuit Court of Appeals concerning the SIP. With the decision by the Court on June 28, 1973, the SIP was withdrawn. In December 1973, a revised plan was submitted with an indirect source regulation. The revised SIP was approved on August 15, 1974, except for a portion of the SO_2 plan concerning alternative

control strategies. Less stringent SO_2 requirements were to be investigated. On August 30, 1975, revised TSP and SO_2 strategies were submitted; these source-specific regulations were adopted July 14, 1976.

Several strategies were devised to solve the photochemical oxidant problem as defined in the 3-month summer study. These involved a stationary source regulation specifying exempt solvents, an open burning regulation, and the FMVCP. Because estimates indicated that the strategies would not provide attainment until 1980, additional controls were proposed, such as improved incineration practices, improved equipment design, and better operating practices. With these additional control techniques attainment was projected to occur by 1975.

Although the 3-month study in 1971 indicated that Jefferson County was an NO_x nonattainment area, application of RACT to stationary sources and implementation of the FMVCP were not expected to provide attainment of the national NO_x standard by 1975. Other control strategies were considered too complex. On May 8, 1974, the EPA ruled that the reference method for NO_x monitoring needed reevaluation and that Kentucky was therefore an unclassified or attainment area for NO_x.

The 1979 SIP required TSP, SO_2, and O_3 strategies in Jefferson County. All parts of the study area were still considered attainment or unclassified areas for NO_x. Because Clark and Floyd Counties in Indiana influence the air quality of Jefferson County in Kentucky, they were included in determining the overall

pollution problem and preparing strategies to reduce emissions of nonattainment pollutants.

Despite the control strategies contained in the 1976 revised SIP, more recent modeling indicated that the national TSP standard would not be achieved by the 1982 and 1987 deadlines. Because existing regulations represent RACT, nonattainment appeared to be the result of TSP emissions from nontraditional sources. Therefore, the TSP strategy not only included the continuation of RACT regulations, but also required a study of nontraditional sources of TSP. Upon completion of the study, a revised SIP will be submitted by July 1, 1982.

Modeling also indicated that compliance with the SO_2 regulations would provide attainment of the national SO_2 standard. Although the regulations in effect since the 1976 revision represent RACT, compliance is not required of some large SO_2 sources until January 1985. Because the Clean Air Act made allowances for sources with late compliance dates, SO_2 attainment is projected to occur by January 1985.

The strategies necessary for attainment of the O_3 standard are RACT for stationary sources and an I/M program and TCM's for mobile sources. The Kentuckiana Regional Planning and Development Agency, which submitted the O_3 portion of the plan, first evaluated the strategies without an I/M program. The TCM's included techniques already in operation (such as improved highway systems and mass transit), techniques approved but not implemented (such as the metro carpool, an improved bicycle network,

and a study of travel needs in the center city), and techniques that still needed to be investigated. Because all these TCM's plus the application of RACT to stationary VOC sources did not provide attainment by 1982, an I/M program was deemed necessary for Jefferson County in Kentucky and Clark and Floyd Counties in Indiana. This program has not yet been finalized.

4.2.2 Implementation Delays

Some delays resulted from legal activities concerning the TSP and SO_2 portions of the 1972 SIP; other delays were caused by slow delivery and construction of control equipment, failure of control equipment to meet performance specifications, and problems with related equipment. Also, the exempt organic material regulation contributed to delays in O_3 attainment.

The JCAPCD cited no delays in implementation of the 1979 SIP. Neither the short preparation time nor the change in the national O_3 standard presented problems, although the I/M program required by the O_3 portion of the SIP still must be finalized.

4.2.3 Emission Reductions

As Table 4-4 shows, base year TSP emissions totaled 41,955 tons/yr. The 1972 SIP strategies, which involved stationary source regulations in Kentucky and Indiana, are expected to reduce TSP emissions by 88 percent, and produce attainment.

The SO_2 regulation limits emissions to 1.2 $lb/10^6$ Btu. Projections indicate that it will reduce the base year emissions of 231,593 tons/yr by 26 percent.

BLANK PAGE

TABLE 4-4. SIP INFORMATION: JEFFERSON COUNTY, KENTUCKY

Pollutant	SIP	Strategy	Base year emissions, tons/yr	Projected emissions by NAAQS deadline, tons/yr
TSP	1972	Kentucky and Indiana source category regulation	41,955	5,035
SO_2	1972	Kentucky and Indiana source category regulation	231,593	171,379
Photochemical oxidants	1972	RACT, control effects of other regulations, FMVCP	68,379	38,292
NO_x[a]	1972	New regulations, FMVCP	69,447	78,475
TSP and SO_2	1976	Kentucky and Indiana source category regulation	b	b
TSP	1979	RACT, study of nontraditional sources	b	b,c
SO_2	1979	RACT	b	b,d
O_3	1979	RACT, TCM's, I/M	72,730[e]	43,638[f]

[a] The EPA declared Kentucky an unclassifed or attainment area for NO_x on May 8, 1974.

[b] Data not available.

[c] Reduction by 29% necessary.

[d] Reduction by 63% provided.

[e] Base year emissions from Clark and Floyd Counties in Indiana and from Jefferson County in Kentucky totaled 86,410 tons/yr.

[f] Projected emissions from Clark and Floyd Counties in Indiana and from Jefferson County in Kentucky totaled 52,710 tons/yr.

Information in the 1972 SIP indicated that the base year level of photochemical oxidant emissions in Jefferson County was 68,379 tons/yr. Modeling showed that a 44 percent reduction would be necessary for attainment of the national standard for HC. Estimates of controlled emissions indicated that the FMVCP and modifications to stationary sources would produce an emission reduction of 10.5 percent by 1975 and 17.1 percent by 1977. Furthermore, attainment would not be realized in 1980. The application of RACT to stationary sources, and the enforcement of regulations on open burning, incinerators, etc., as well as the FMVCP was expected to ensure attainment by 1975.

Modeling indicated that a 41.9 percent reduction in emissions was necessary to attain the national NO_x standard. Emission estimates indicated that NO_x emissions would increase 13 percent by 1975 and 13.1 percent by 1977. Projections indicated that by 1980 attainment would be possible. The TCM's that could reduce NO_x emissions were too complex to incorporate. In 1974, EPA ruled that all areas in Kentucky were unclassified or attainment for NO_x.

After revision of the TSP and SO_2 portions of the SIP in 1976, the 1977 Clean Air Act required attainment for TSP as expediciously as possible, and that the national primary standard be attained no later than December 31, 1982. The strategies of strict emission limits for specific source categories indicated compliance with regulations did not always produce attainment of NAAQS. Nontraditional sources of TSP needed to be controlled. A

29 percent reduction is necessary for attainment of the primary TSP standard by 1982. The SO_2 portion of the SIP indicated that the revised regulations would provide a 63 percent reduction by the 1982 deadline if all stationary sources achieved compliance with regulations.

Calculations indicated that O_3 attainment would require a 40 percent reduction in VOC emissions from sources in Jefferson County, Kentucky, with a 39 percent reduction in VOC emissions from sources in Clark and Floyd Counties in Indiana. Estimates indicated that the applications of RACT would reduce VOC emissions 11 percent by 1982 and 24 percent by 1987. When various TCM's were added to RACT, the strategy still fell short of the 40 percent reduction necessary for attainment. Implementation of an I/M program is necessary to attain the O_3 standards by 1987.

In general, representatives of JCAPCD were of the opinion that lack of compliance with regulations was responsible for the area being classified as nonattainment in the 1972 SIP. Emission estimates calculated for the SIP indicated that 48 percent of TSP emissions were caused by sources out of compliance; however, by 1976 this was reduced to 29 percent. The biggest contributors were the powerplants of Louisville Gas & Electric (LG&E). Non-traditional TSP sources now constitute the primary cause of nonattainment.

Sources out of compliance with SO_2 regulations accounted for 74 percent of base year emissions in the 1972 SIP. In 1976, LG&E powerplants were still responsible for 63 percent of emissions.

In 1972, HC sources out of compliance contributed 58 percent of base year emissions; in 1976, the percentage was reduced to 39 percent. By August 7, 1977, major stationary sources that were contributing heavily to nonattainment but meeting their compliance deadlines were General Electric, Rohm and Haas, E. I. du Pont, and three LG&E plants. Before adoption of the 1979 SIP, only the three LG&E plants were out of compliance but still following their compliance schedules. After adoption of the 1979 SIP, the sources out of compliance included Rohm and Haas, 12 minor VOC sources, and roughly 600 service stations.

4.2.4 Enforcement Activities

Every notice of violation issued by the JCAPCD must result in a court action. The necessity of legal action promotes voluntary compliance. In 1979, 89 actions were taken; this was the least number in several years. Enforcement of regulations limiting visible emissions has made sources aware of the need for compliance, and mandatory submission of emission inventories has provided JCAPCD with valuable data from which to work.

Table 4-5 shows that of 370 sources presently located in Jefferson County only the three LG&E plants were out of compliance before the 1979 SIP was adopted. These plants emitted 4603 tons of TSP, 216,972 tons of SO_2, and 751 tons of VOC. After the 1979 SIP was adopted, Rohm and Haas and 12 minor VOC sources did not meet regulations. Also, the 1979 SIP required service stations to provide vapor recovery systems for VOC control.

TABLE 4-5. ENFORCEMENT INFORMATION: JEFFERSON COUNTY, KENTUCKY

Sources subject to strategy	370 in 1979 89 major allowable sources according to 1972 SIP 62 major allowable sources according to 1979 SIP
Sources in compliance	57 major sources in 1973
Sources on compliance schedule	61 in 1973
Sources out of compliance	In 1977: 3 LG&E Plants[a] B.F. Goodrich[a] General Electric[a] E.I. du Pont[a] Rohm and Haas[a] In 1979: 3 LG&E Plants[a]
Investigations of noncompliance	Roughly 300 each year
Portion of base year emissions from sources out of compliance	In 1972: TSP, 48% SO_2, 74% Photochemical oxidants, 58% In 1976: TSP, 29% SO_2, 63% VOC, 39%
Relationship between noncompliance and nonattainment	Strong, especially for SO_2
Effect of enforcement actions	Strong effect on voluntary compliance; all NOV's require court activity

[a]On compliance schedule.

Compliance schedules will end in October 1980 for larger stations and in October 1982 for smaller ones. As early as 1973, there were 57 major sources in compliance and 61 other sources on compliance schedules.

Investigators may determine compliance status by stack tests, evaluations of visible emissions, material balance calculations, or estimates based on emission factors. Roughly 300 investigations of noncompliance are made each year in Jefferson County.

SECTION 5

IMPLEMENTATION/ENFORCEMENT IN INDIANA

The Indiana Air Pollution Control Board has responsibility for handling the air pollution control program for the entire Indiana portion of the study area. The IAPCB is the decision-making body for the Indiana Air Pollution Control Division, which is part of the Indiana State Board of Health. Because the sources that most affect air quality are located in Clark, Dearborn, and Floyd Counties, they are the Indiana areas primarily involved in the SIP strategies along the Ohio River Valley.

5.1 STRATEGY SCHEDULES

Preparation of the 1972 SIP was difficult for the IAPCB because of limited personnel (6 employees in 1970 and only 14 by 1972) and budgets. In addition, several counties were not meeting NAAQS. The Battelle Memorial Institute was hired to prepare the 1972 SIP with very little input from the IAPCB.

Information, including monitoring data available in 1972, indicated that Clark, Dearborn, and Floyd Counties were not meeting NAAQS for TSP or photochemical oxidants. Clark and Floyd Counties also exceeded the national SO_2 standard.

Table 5-1 lists information about SIP development in Clark, Dearborn, and Floyd Counties. The SIP was submitted on January 31, 1972, and approved on May 31, 1972. Regulations concerning TSP were promulgated on June 8, 1972. These regulations limited emissions from fuel combustion sources according to heat input and process weight rate for specific process source categories. In 1974, visible emissions and fugitive dust regulations were added to the SIP to provide for achievement of NAAQS, although standards were not attained by 1975. After 1975, the IAPCB began working more closely with industry so that a mutually agreeable means of improving air quality could be developed.

On September 14, 1972, a new SO_2 regulation was adopted. Achievement of NAAQS was to occur through compliance with the new regulation, which limited emissions according to the heat input of the source. In June 1973, six Indiana utilities filed suit in the Marion County (Indianapolis) Circuit Court; the suit maintained that appropriate control equipment was unavailable at that time. In November 1974, a revised SO_2 regulation was promulgated, although EPA disapproved the portion of the SIP dealing with maximum hourly ground level concentrations.

The photochemical oxidant portion of the SIP was promulgated on March 31, 1972. The regulations specified requirements for the storage and loading of VOC and for specific processes. On October 7, 1974, the regulation was revised by providing a list of hydrocarbons regarded as exempt or nonphotochemically reactive.

TABLE 5-1. HISTORICAL INFORMATION: INDIANA SIP

Action	Date	Comment
Hearing on proposed regulations	November 19, 1971	
Public hearing for setting final standards	December 17, 1971	
Battelle submitted 1972 Indiana SIP	January 31, 1972	Limited IAPCB input
Photochemical oxidant regulations adopted	March 31, 1972	
Approval of SIP	May 31, 1972	
New TSP regulations promulgated	June 8, 1972	
Hearing on proposed amendments to air pollution control regulations	July 7, 1972	Conducted by IAPCB
New SO_2 regulation adopted	September 14, 1972	
Public hearing on existing TSP sources	October 5, 1972	
EPA approved new regulations on stationary sources	April 16, 1973	
Marion County Circuit Court overturned SIP after six Indiana utilities filed a suit similar to suits in Ohio and Kentucky	June 28, 1973	
IAPCB rejected request by three power companies not to enforce SO_2 regulations, but granted 1-year extension to three others	July 27, 1973	Unavailability of control equipment
Fugitive dust section added to TSP portion of SIP	January 22, 1974	

(continued)

TABLE 5-1 (continued)

Action	Date	Comment
IAPCB replaced AQCR classifications with a county system	July 19, 1974	Indicated attainment by priority rating (A, B, or C)
IAPCB permitted use of high-sulfur coal until 1978 in Priority B areas	July 25, 1974	
Visible emissions section added to TSP portion of SIP	October 7, 1974	
Photochemical oxidant regulations revised	October 7, 1974	Exempt hydrocarbons introduced
SO_2 regulation revised	November 21, 1974	Regulation partially disapproved; it required constant emission controls in most polluted areas, but permitted use of high-sulfur coal in others
U.S. Seventh Circuit Court upheld EPA approval of SIP	January 23, 1975	Against utility objections concerning feasibility
SIP revision excluded emission data from confidentiality class	February 26, 1975	
Preliminary approval of SO_2 strategies for Clark, Ohio, and Switzerland Counties; disapproval of SO_2 strategies for Dearborn, Floyd, and Jefferson Counties	May 13, 1975	
Hearing to establish NAAQS	June 24, 1975	

(continued)

BLANK PAGE

CONTENTS

		Page	
Figures		iv	1/A7
Tables		v	1/A8
Abbreviations and Symbols		vi	1/A9
Acknowledgment		vii	1/A10
1.	Introduction	1	1/A11
2.	Summary	5	1/B1
3.	Implementation and Enforcement in Ohio	8	1/B5
3.1	Ohio Environmental Protection Agency	8	1/B5
3.2	Regional Air Pollution Control Agency	12	1/B9
3.3	Southwestern Ohio Air Pollution Control Agency	28	1/D3
4.	Implementation and Enforcement in Kentucky	40	1/E2
4.1	Kentucky Department of Natural Resources and Environmental Protection	40	1/E2
4.2	Jefferson County Air Pollution Control District	54	1/F8
5.	Implementation/Enforcement in Indiana	66	1/G8
5.1	Strategy Schedules	66	1/G8
5.2	Implementation Delays	74	2/A8
5.3	Emission Reductions	74	2/A8
6.	Implementation and Enforcement Efforts by the U.S. Environmental Protection Agency	81	2/B2
6.1	Region IV	81	2/B2
6.2	Region V	82	2/B3

TABLE 5-1 (continued)

Action	Date	Comment
Revision to SIP; county-by-county designations and timetables	October 25, 1975	
EPA approved revisions to SIP	December 16, 1975	Replacement regulations
EPA disapproved amendments to SIP	May 6, 1976	Less stringent VOC requirements
U.S. Seventh Circuit Court dismissed review of AQMA's	May 10, 1976	Suit brought by power companies
EPA requested revision to SIP	August 2, 1976	Existing SIP considered inadequate to attain and maintain NAAQS
EPA disapproved portions of SO_2 classification	August 24, 1976	
Proposed SIP revision provided enforcement strategies for open burning, incineration, and continuous monitoring	November 9, 1977	
President Carter declared emergency, suspended TSP and SO_2 regulations to conserve fuel	February 3, 1978	Coal shortage
SIP revisions promulgated for open burning, incineration, and continuous monitoring	June 22, 1978	
1979 Indiana SIP submitted	February 1979	
TSP portion of 1979 SIP concerning Dearborn County submitted to IAPCB	June 1979	

(continued)

TABLE 5-1 (continued)

Action	Date	Comment
U.S. Seventh Circuit Court ruled that EPA did not violate Administrative Procedures Act by designating nonattainment areas	August 1, 1979	
EPA received revised Indiana SIP	August 14, 1979	
Deadline not met for submission of TSP portion of 1979 SIP concerning Clark County	December 31, 1979	
Deadline not met for submission of O_3 portion of 1979 SIP concerning Clark and Floyd Counties	December 31, 1979	
Citizens for a Better Environment filed suit because SIP did not provide attainment by December 31, 1982	January 3, 1980	Group wanted EPA to prepare SIP
Revision to TSP portion of 1979 SIP concerning Dearborn County	February 1980	
EPA received SIP revisions concerning emission control in nonattainment area	March 27, 1980	
EPA extended comment period concerning Section 126	May 2, 1980	
EPA extended comment period for revisions to SIP	May 7, 1980	

If the exempt hydrocarbons were used, the source was considered in compliance with the regulation. Soon it was realized that attainment was not going to be accomplished, and industry was consulted about methods of reducing VOC emissions.

Recent modeling determined that four townships in Dearborn County were not attaining the national TSP standard. Also, modeling in Louisville, Kentucky, by the JCAPCD indicated that four townships in Clark County were TSP nonattainment areas, but the IAPCB did not believe that a strategy was necessary for Clark County. Further, Clark and Floyd Counties were designated as nonattainment areas for O_3.

The 1979 SIP for Indiana has undergone a few minor revisions. The SIP was first submitted to the EPA Region V Administrator in February 1979, but has not yet been adopted. The final package is anticipated to be approved by the Administrator in September or October 1980. At this time, the Clark County portion of the plan concerning TSP emissions has not been finalized. The IAPCB has received assistance from the KDNREP and a contractor hired by Region IV to perform modeling.

The Dearborn County portion of the 1979 SIP for TSP was initially prepared in June 1979. Revisions to the RACT requirements were necessary, and the current SIP for Dearborn County will be submitted in August 1980. The strategy involved the application of RACT to existing stationary sources and of Lowest Achievable Emission Rate (LAER) and New Source Performance Standards (NSPS) to new sources in the nonattainment area. The RACT

regulations concern stationary source categories and provide an exhaust gas grain loading regulation for source categories not specified. Modeling indicates that the only stationary sources where RACT would significantly reduce emissions are boilers belonging to Seagrams Distillers. Because RACT alone will not provide attainment, reduction of emissions from nine TSP area source categories was studied. The IAPCB believes that the primary cause of nonattainment is emissions from unpaved roadways. The required attainment date does not provide adequate time for implementation of a strategy to reduce these area source emissions. Further, the IAPCB believes that Dearborn county is affected by TSP emissions from coal-fired powerplant boilers in Kentucky and Ohio.

The O_3 portion of the SIP for Clark and Floyd Counties was handled primarily by the Kentuckiana Regional Planning and Development Agency with assistance from Jefferson County Air Pollution Control District.

The strategies used to control VOC emissions are RACT (including Stage I vapor recovery at service stations) for stationary and area sources, various TCM's, the FMVCP, and an I/M program. Neither the residents of the area nor the IAPCB is enthusiastic about the I/M program, but it must be part of the SIP because O_3 attainment could not otherwise be demonstrated by the 1982 deadline. When these strategies are implemented, NAAQS will be attained by the 1987 deadline. The final SIP has not yet been submitted.

5.2 IMPLEMENTATION DELAYS

Several delays have occurred in implementation of the Indiana SIP. As in the other states, suits by utilities caused some delays. Officials indicate reluctance to enforce strategies developed in the SIP because the requirements are challenged and revised frequently. Also, from the beginning, the IAPCB has lacked sufficient staff to handle the total air pollution control program of the State adequately. The EPA provided assistance, but in most cases such help was too late. By far the majority of the IAPCB time was spent in preparing the SO_2 SIP in the Gary/Hammond area. Thus, the IAPCB has been late in SIP submittals and slow in enforcement of SIP requirements in the Ohio River Valley region.

5.3 EMISSION REDUCTIONS

The IAPCB could provide no specific information concerning emission reductions resulting from strategies in the 1972 SIP prepared by the Battelle Memorial Institute.

Table 5-2 presents the SIP information available for Clark, Dearborn, and Floyd Counties. In Dearborn County, TSP emissions must be reduced by 44 percent. The revised SIP includes application of RACT to one stationary source; however, this will not yield adequate emission reduction for attainment without the implementation of methods for reducing emissions from nine area source categories.

TABLE 5-2. SIP INFORMATION: CLARK, DEARBORN, AND FLOYD COUNTIES

Pollutant	County	SIP	Strategy	Emission reduction needed for attainment, %	Attainment by NAAQS deadline
TSP	Clark, Dearborn, and Floyd	1972	Source category regulation	a	No
SO_2	Clark, Dearborn, and Floyd	1972	New regulation	a	Yes
Photochemical oxidants	Clark, Dearborn, and Floyd	1972	Source category regulation	a	No
TSP	Clark, Dearborn, and Floyd	1974 revision	Fugitive dust and visible emission regulations	a	No
SO_2	Clark, Dearborn, and Floyd	1974 revision	Source category regulation	a	Yes
Photochemical oxidants	Clark, Dearborn, and Floyd	1974 revision	Exempt hydrocarbon regulation	a	No
TSP	Clark	1979	a	a	a
TSP	Dearborn	1979	RACT, study of area sources	44	No
O_3	Clark, Dearborn, and Floyd	1979	RACT, FRWCP, TCM's control of area sources	44	Yes

[a] Data not available.

Attainment of the national O_3 standard in Clark and Floyd Counties will be accomplished by an emission reduction of 40 percent by 1982 and 44 percent by 1987. Rollback modeling information indicated reductions of 2 percent from application of RACT regulations to point sources, 15 percent from the FMVCP, 5 percent from various TCM's, and 6 percent from control of area sources. Because the total was less than the reduction needed for attainment by 1982, an I/M strategy was necessary. The addition of an I/M program with a 20 percent stringency factor (failure rate) is predicted to provide attainment by the 1987 deadline.

Although information in the emission inventories for Indiana indicate that a minimal portion of the base year emissions comes from sources out of compliance, the IAPCB believes that such sources account for at least 15 percent and perhaps as much as 50 percent of the base emissions. The IAPCB does not regard the emission inventories, which were prepared by contractors, as very accurate. The agency cited malfunction of control equipment and fugitive dust from unpaved roads as substantially contributing to ambient pollution.

5.4 ENFORCEMENT ACTIVITIES

Because the IAPCB could not provide enforcement information by county, Table 5-3 presents the available statewide information. In general, enforcement serves as a deterrent. Most source owners and operators are aware of the penalties that could

TABLE 5-3. ENFORCEMENT INFORMATION: INDIANA

Sources subject to strategy	Major allowable sources according to 1972 and 1979 SIP's: 11 in Clark County 8 in Dearborn County 3 in Floyd County
Sources in compliance	Major sources throughout Indiana: 335 in 1973 716 in 1974 613 in 1976 699 in 1977 693 in 1978
Sources on compliance schedule	Throughout Indiana: 129 in 1973 116 in 1974 45 in 1976 165 in 1977 173 in 1978
Sources out of compliance	Major sources throughout Indiana: 93 in 1973 35 in 1974 14 in 1976 5 in 1977 9 in 1978
Portion of base year emissions from sources out of compliance	Emission inventory indicates minimal, but it could have been 15 to 50% from 1972 to 1979
Relationship between noncompliance and nonattainment	None; nonattainment caused by fugitive dust and equipment malfunctions
Enforcement actions	Throughout Indiana in 1974: 20 companies issued NOV's 14 companies involved in hearings 5 cases referred to the State Attorney General's Office Throughout Indiana in 1975: 23 companies issued NOV's 7 companies involved in hearings 0 cases referred to the State Attorney General's Office

(continued)

TABLE 5-3 (continued)

Enforcement actions (continued)	Throughout Indiana in 1976: 33 companies issued NOV's 3 companies involved in hearings 3 cases referred to the State Attorney General's Office Throughout Indiana in 1977: 31 companies issued NOV's 3 companies involved in hearings 3 cases referred to the State Attorney General's Office Throughout Indiana in 1978: 30 companies issued NOV's 6 companies involved in hearings 4 cases referred to the State Attorney General's Office

be imposed if operations are not satisfactory, and very few require more than an informal conference.

The stages involved in legal activity are as follows: (1) a stack test is performed to determine if a violation definitely exists; (2) a notice of violation is issued and an informal conference is held; (3) if no action occurs, an adjudicatory hearing is held; (4) an order is recommended to the IAPCB; (5) the IAPCB issues an order concerning the definition of a compliance schedule; (6) if the compliance schedule is not followed, the Board refers the case to the Attorney General's Office; and (7) a suit is filed in the appropriate county court.

Approximately five cases per year are referred to the Attorney General, on a statewide basis. Notices of violation are the primary means used for informing a source of problems. Generally, between 14 and 33 notices of violation are issued annually statewide. Legal activity has not affected other IAPCB enforcement efforts much because few companies have been involved in extensive legal difficulties.

Information obtained from the IAPCB annual reports indicates that major sources have made considerable progress in achieving compliance or following a compliance schedule. Because major sources are achieving compliance, minor sources are being scrutinized more closely. In 1979, only two sources were out of compliance in the Indiana portion of the study area.

Investigators determine compliance for TSP by evaluation of visible emissions unless the source has been proven to be in compliance by a stack test. Before a notice of violation is issued, a stack test is usually performed. Compliance with SO_2 regulations is determined by fuel analysis information.

SECTION 6

IMPLEMENTATION AND ENFORCEMENT EFFORTS BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

6.1 REGION IV

The Region IV Office of EPA is located in Atlanta, Georgia, and oversees air pollution control in eight states, one of which is Kentucky. Part of the responsibility of each regional office is to determine if the implementation plans submitted by the states within its jurisdiction will provide attainment of NAAQS. Additionally, each office must enforce all Federal air pollution control regulations.

6.1.1 Strategies

The 1972 SIP's presented limited analyses of air pollution problems because of poor air quality monitoring data and limited understanding of the SIP process. As time progressed, the monitoring programs improved.

The strategies presented in the 1979 SIP's are complex, partly because of better understanding of pollution control problems and partly because of extensive court actions. Technical requirements of the 1979 SIP's are great, and staff levels are limited.

Conditional approval has been given to the O_3 portion of Kentucky's 1979 SIP. When authority for an adequate I/M program

is obtained, unconditional approval will be granted. Strategies for control of TSP emissions from sources in the steel industry have been rejected because RACT was not included. Region IV has indicated that strategies for control of TSP emissions from other sources are adequate and should soon issue a final report. At present, the Region IV Office is reviewing SO_2 strategies.

6.1.2 Enforcement Activities

Initially, the greatest enforcement problem was to convince industry to install control equipment on emission sources. The current TSP problem is related primarily to emissions from nontraditional sources.

The enforcement activities of Region IV have concentrated on powerplants. Region IV staff members have inspected plants at the same time as state or local officials. Notices of violation have been issued, and in some instances administrative orders have been required. In particular, Louisville Gas & Electric plants have been put on compliance schedules.

Little VOC enforcement action has been taken in the Ohio River Valley by Region IV.

6.2 REGION V

The EPA Region V Office, located in Chicago, has jurisdiction over six states. Two of these, Ohio and Indiana, are within the study area. The enforcement of Federal regulations and scrutiny of state and local programs, including SIP review, are the responsibilities of the Regional Office.

6.2.1 Strategies

Many strategy changes have occurred since the 1972 SIP's were submitted. Initially, technical data and experience were not sufficient for preparation of effective SIP's. Federal guidance suggested reduction of emissions as soon as possible. The technique used in developing control strategies was to propose regulations that would provide NAAQS attainment in the worst pollution area in each state. This technique caused massive regulatory "overkill" in cleaner areas of a state and did not necessarily provide attainment of NAAQS in the other areas. The primary reason for failure was litigation and resistance to emission limits that sources considered more stringent than necessary to attain NAAQS. As more accurate emission data were obtained, it became clear that faulty data had been used in preparation of the original SIP's. Revisions to SIP's were frequently submitted, and delays in Federal approval of these revisions sometimes caused local and state agencies to enforce regulations different from those of the EPA.

The 1979 SIP's are so complex that the Regional Office finds handling them in a timely fashion difficult. Some personnel in the Regional Office believe that attainment of NAAQS may pose problems despite strategies indicating the opposite. In Ohio and Indiana, the models selected for determining emission reductions were generally those that required the least reduction. The EPA is concerned about some emission factors used in emission inventory calculations because the factors can represent average

values for a few sources with widely different emissions. Additionally, some EPA officials are concerned that the reductions anticipated from some TCM's are exaggerated.

6.2.2 Enforcement Activities

Region V of the EPA concentrated enforcement action on powerplants in the Ohio River Valley. In most cases, inspections were made by EPA staff only. Several notices of violation were issued to powerplants. Most of these problems were handled by administrative orders rather than prosecutions. Also, notices of violation were issued to sources that did not follow the procedural requirement of filing reports on fuel acquisition. For the most part, however, these actions were not pursued.